THE NEWSWEEKLY OF INFORMATION SYSTEMS MANAGEMENT
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# COMPUTERWORLD

## CA on acquisition trail again

BY JOHANNA AMBROSIO
and NELL MARGOLIS
CW STAFF

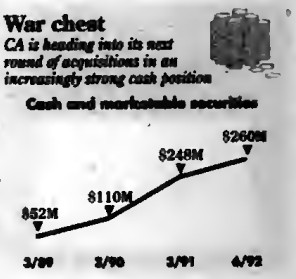
ATLANTA — They're back.

Armed with refreshed cash reserves, Computer Associates International, Inc. is on the prowl for more mainframe system software companies, CA Chairman Charles Wang said last week.

"Two years ago, we started accumulating cash in preparation for our second wave of acquisitions because we knew it would begin soon," Wang said during an interview at a CA user conference. "It's begun."

CA's pending acquisition of On-Line Software International, Inc. in Fort Lee, N.J., announced on Aug. 16, marked the start of this newest round, he added.

**War chest**
*CA is heading into its next round of acquisitions in an increasingly strong cash position*




Wang said he is primarily interested in mainframe systems software companies such as Goal Systems International, Inc. and Legent Corp. Executives from those two companies and others, however, said no such deals are is in the works (see story page 100).

Although Wang said he has no specific time frame for making more acquisitions, he added, "We're looking around to see what's good. We're biding our time, seeking out and waiting for opportunities." Out of the 30-plus companies that CA has

*Continued on page 100*

## Portables on parade

*IBM, Toshiba notebooks expected to lead the way*

BY MICHAEL FITZGERALD
CW STAFF

IBM and Toshiba America Information Systems, Inc. will lead a march of portables slated for shipment by the end of this year, sources close to both firms said.

Additionally, scores of portable products, ranging from luggables with color screens to palmtops, are expected to be announced, with the notebook form factor continuing to dominate. AST Research, Inc. and Wyse Technology, Inc. have kicked off the season with notebook computers (see stories pages 54 and 101).

IBM will enter the notebook market with a post-Comdex/Fall '91 announcement of a 5½-pound box based on Intel Corp.'s 16-MHz 80386SX, with a 20-MHz version scheduled to come later. This notebook will resemble IBM Japan's Personal System/55note computer (CW, April 8) but will be more rugged, with an improved keyboard, a supertwist LCD, backlit IBM Video Graphics Array screen and a floppy drive. Users can choose between a 40M- and 60M-byte hard drive. IBM has not decided

*Continued on page 101*

## Message to federal IS execs: Time to think downsizing

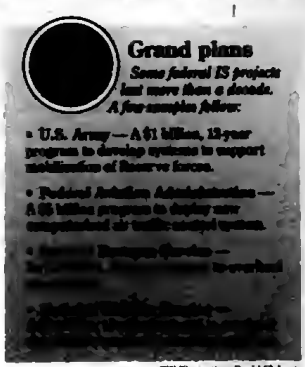
BY GARY H. ANTHES
CW STAFF

WASHINGTON, D.C. — After years of castigating federal agencies for their troubled "grand design" information technology projects, the U.S. General Services Administration will suggest some answers this week. The GSA plans to outline four system modernization alternatives, all variations on the downsizing theme.

However, the recommendations may get a lukewarm reception from federal information systems managers who support the grand design concept.

The four strategies — supported by case histories from the public and private sectors — are tailored to the differing cultures, missions and budgets of large organizations. They are evaluated against 16 risk measures, from the stability of policy to the experience of procurement staff.

The downsizing approaches are contained in a report written for the GSA by American Management Systems, Inc. in Arlington, Va. It is, in essence, a sequel to a 1988 report in which the GSA said agencies should forsake megaprojects, which sometimes extend over a decade and cost more than $1 billion, in favor of smaller, less risky efforts.




CW Illustration, David Flaherty

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## How much are you worth?

If you want to know what a recession really feels like, just ask an information systems professional. According to *Computerworld*'s fifth annual salary survey, 1991 salary hikes for IS staff members did not keep pace with average wage raises nationally for white-collar and salaried workers.

Other findings show that top IS executives in New York earn more than their counterparts in other areas, even after their salaries have been adjusted for the region's high cost of living.

The Northern California region offers some of the highest IS salaries in the nation, but one in three IS workers there feels his pay is not competitive.

The survey examined 23 IS-related job titles by industry and geographic region and shows which titles draw the biggest paychecks, which industries pay better than others and how your location and cost of living can influence your salary.

*For more details, see story, charts, starting on page 59.*

**IS Top 5**
*In salary plus incentives, all of the IS Top 5 earn more than $50K annually*

1. CIO/Vice president/Director of IS — Pay $79,363
2. IS manager/Supervisor — Pay $62,426
3. Systems manager/Programming manager — Pay $58,435
4. Technical services manager — Pay $57,825
5. Project manager — Pay $53,779

Source: *Computerworld* research

## AMD lawsuit slams Intel

*Charges chip giant with monopoly, coercion*

BY JIM NASH
and SALLY CUSACK
CW STAFF

Advanced Micro Devices, Inc. filed a $2 billion lawsuit last week against its semiconductor rival and market leader Intel Corp. AMD charged Intel with deliberately trying to create a monopoly with its 80386 and 1486 microprocessors.

Reaction to the suit from industry observers and users was muted. Analysts speculated that it could help dissipate fear in the market that Intel might harass or zero-allocate personal computer vendors who decide to use AMD chips.

Intel's reaction was swift and caustic. Andy Grove, president and chief executive officer of the Santa Clara, Calif.-based company, called the suit "ridiculous" in a prepared statement, referring to AMD as "the Milli Vanilli of semiconductors."

The suit, filed in the U.S. District Court of San Jose, charges Intel with violating the Sherman and Clayton antitrust acts. AMD claims Intel tried to monopolize the chip and chip-peripheral markets for IBM-compatible

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## INSIDE

**IBM announces and announces.** More pieces of IBM's upcoming introductions are starting to surface. A $12,000 version of the AS/400 is due this week. Next week, look for networking and Information Warehouse announcements. Pages 4 and 6.

**Product Spotlight** — You thought you had trouble choosing your *last* spreadsheet — wait until you see the new changes. Page 69.

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***"The big hurdle is not money. It's a cultural change to get workers to use a different machine."***

DAVE BENNETT
DUNKIN' DONUTS

*On the choice between PCs and workstations. See story page 4.*


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## The 5th Wave

"OH, SCARECROW - I DON'T THINK YOU'LL NEED YOUR LAPTOP IN THE EMERALD CITY, ANYWAY."

# EXECUTIVE BRIEFING

■ **Grand designs must be slimmed down,** according to an upcoming report from the U.S. General Services Administration. The paper gives federal IS managers a slew of suggestions on how to shorten their long-term plans. The GSA outlines four downsizing strategies that are tailored to the different ways and means of large organizations and evaluated against 16 risk measures ranging from the guiding policy's stability to the procurement staff's savvy. **Page 1.**

■ **Companies should manage valuable software assets** as they do their stocks — by taking an investment portfolio approach. Whereas securities analysts would use the information in their portfolios to decide to buy, sell or hold a firm's stock, IS managers can use their software portfolio information to decide whether to maintain, rewrite or replace particular applications. **Page 77.**

■ **Get out the checkbook and clear the shelves:** Toshiba America Information Systems and IBM are about to release a torrent of portable products, from color-screen luggables to palmtops with notebooks aplenty in between. **Page 1.**

■ **The next few months will be telling ones for Lotus,** once it starts shipping the Windows version of its 1-2-3 spreadsheet. While Lotus still holds half of the spreadsheet market, it lost 12% of its market share in the first half of 1991, says market research firm Computer Intelligence/Infocorp. And 12% of the market is exactly what Microsoft's Windows-based Excel gained in the same period. **Page 69.**

■ **After a two-year time-out to put its own house in order,** Computer Associates is gearing up for another round of software company acquisitions. **Page 1.**

■ **Vendors are readying a blizzard of low-cost, high-clout workstations,** but commercial users are not blown away. Effective applications and other productivity boosters outrank a nice price on their wish lists, they say. **Page 4.**

■ **IBM may be about to open up** its networking proprietary architecture to the rest of the world — in particular, the Unix world. **Page 4.**

■ **How does your salary stack up against the paychecks of your peers?** *Computerworld's* 5th annual salary survey looks at 23 IS-related jobs by industry and location to show who gets what, and where. **Page 1.**

■ **Last week's $40 million investment by Japanese giant Fujitsu Ltd.** should help 1-year-old start-up Hal Computer Systems bring its planned Sun Microsystems Sparc-based commercial Unix systems to market. It could also fuel Fujitsu further toward the Unix player status it seeks. **Page 10.**

■ **It's back to court for semiconductor rivals Advanced Micro Devices and Intel,** as AMD files a $2 billion lawsuit alleging a list of antitrust violations against the veteran chip maker. **Page 1.**

■ **Network users and managers give a thumbs-up** to an FCC proposal to let competitors — and even customers — provide private-line services using telephone company facilities. **Page 57.**

■ **On site this week:** Des Moines, Iowa-based insurance firm Principal Financial Group's IS department supports some 12,000 users through a combination of PCs and terminals. But it took IBM's System/390 generation and Escon fiber-optic-based channel architecture to give Principal IS its own disaster recovery operation. **Page 43.** Research firms including the National Science Foundation, Pacific Northwest Laboratories and Lawrence Livermore National Laboratory are joining forces to use high-tech tools in a critical quest: determining the effect of oil well fires that still rage out of control in Kuwait. **Page 51.**

# Technically, It's An Architecture. But It's Really Something Else.

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# Price takes backseat with users

*Workstation owners want service and productivity, not flashy machines*

BY J. A. SAVAGE
CW STAFF

"So what?" appears to be the response of commercial workstation users to the impending rash of announcements from vendors in the low-price, high-performance Unix market. Users are finding personal productivity applications and support issues more important than waiting breathlessly for flashy machines.

During the next year, major workstation vendors — Hewlett-Packard Co., IBM, Digital Equipment Corp. and Sun Microsystems, Inc. — plan to bring out Unix-based desktop systems performing at more than 20 Specmarks and priced at about half the cost per Specmark of current configurations. The new workstations will be in the $4,500 to $9,000 range.

While vendors are attempting to drum up excitement over the coming announcements, commercial users are treating the expected avalanche with indifference.

"The industry is exciting, but it's moving faster than users," said Tom Kucharvy, an analyst at Summit Strategies in Boston. "An out-and-out lowest price is not really the issue."

Given that workstation users tend to be at the forefront of technology, even they agree that price tags are not the primary consideration.

"The big hurdle is not money. It's a cultural change to get workers to use a different machine, one that's graphics-based rather than character-based," said Dave Bennett, director of MIS at Dunkin' Donuts of America, Inc. in Randolph, Mass.

Bennett said that if there were effective personal computer-type applications, such as Microsoft Word from Microsoft Corp., available for workstations or if there were better PC emulators that let him run PC applications on workstations, he would replace PCs in a minute. "Not all DOS [applications] are found in the Unix world. It's a little problem, but when you're the person sitting there, those little barriers are enough."

Employees at Dunkin' Donuts are comfortable using character-based applications on PCs to get their jobs done. Still, Bennett said, he would love to give them low-cost Unix workstations.

The initial cost would be more than offset by long-term increased productivity, once they get used to a new way of doing their jobs, he explained.

Jeff O'Neil, director of advanced systems at Arco Research and Technical Services in Plano, Texas, added that workstations "don't do that well relative to personal productivity on PCs."

Users also said they feel buffeted by constant change in the reduced instruction set computing industry, although the price/performance just keeps getting better. "We shouldn't be chasing technology platforms every year or 18 months," said O'Neil, who uses HP/Apollo and Silicon Graphics, Inc. workstations for geological studies.

"We have to take some of the boxes with a grain of salt and see how they fit needs relative to operations, productivity and support. You have to have some stability for the person that is using the machine."

O'Neil said he is now considering PCs and Apple Computer, Inc. Macintoshes because of the preponderance of personal productivity software available for them and the cost difference in software licenses. Most workstation software carries expensive multiuser licenses.

Yet users appear unwilling to change vendors on the whims of price/performance. But at the same time, they are reserving their loyalty just in case vendors make them an offer they cannot refuse.

3M Co.'s Engineering Division just opened its doors to Unix through HP's 9000 Series 700 workstations, replacing DEC's proprietary systems.

Kelley Kimball, engineering designer, has a few workstations now and said he expects nearly 100 within the next two years. Because he has yet to be faced with the stability problem, he said, he is more willing to consider hot boxes.

"We'll stick with HP for a while, until HP is leapfrogged," he said. "We have to go on a profit margin. Once we've moved from proprietary systems to Unix, then changing vendors won't be as painful."

## Bang for the buck

*While Sun has the lowest system price for its ELC, HP claims the best price/performance figure at the low end of the workstation market*

| Price | Specmarks | Price per Specmark |
|---|---|---|
| **HP 9000 Model 720** | | |
| $11,990 | 55.5 | $216.00 |
| **Sun Sparcstation ELC** | | |
| $4,995 | 20.1 | $248.50 |
| **IBM RS/6000 Powerstation 320** | | |
| $13,992 | 32.8 | $426.50 |
| **Sun Sparcstation IPX** | | |
| $13,495 | 24.2 | $557.60 |

CW Chart: Michael Siggins

# On tap

Expected in the next year are low-cost, high-performance reduced instruction set computing workstations from nearly every major vendor.

Currently, the price level to beat is Sun Microsystems' $4,995 ELC model, rated at a performance level of 20.1 Specmarks.

- **Hewlett-Packard.** HP has the longest lead time — up to July 1992 for announcement — although the company tends to be conservative in such estimates. The workstation is expected to run more than 50 million instructions per second (MIPS) or approximately 40 Specmarks and will cost less than $10,000.
- **IBM.** Before next year — some say next month — expect IBM to have a low-cost workstation. Analysts have said it will be in the $5,000 range. Analysts estimated performance at about 30 Specmarks.
- **DEC.** Later this year, DEC expects to have a 20-Specmark or faster workstation for less than $5,000. It will have some flexibility to be expanded with a higher performance CPU.
- **Sun.** The next single-CPU workstation from Sun will not be in the low-price arena. The company is expected to announce early next year its Sparcstation 3. It should run at about 80 MIPS and about 86 Specmarks. So far, no price has been confirmed by the company.

J. A. SAVAGE

# IBM to open proprietary architectures

BY ELISABETH HORWITT
CW STAFF

NEW YORK — IBM is expected, as part of its product deluge next week, to open up its major proprietary architectures to the rest of the world — in particular, the Unix world. The firm is also expected to add more substance to its sketchy Netview framework, several analysts said.

IBM said it hopes to convince its customers through the upcoming announcement that "you spell 'Open' I-B-M," said Jim Cassell, vice president of Large Systems Services at Gartner Group, Inc.

As IBM spokesmen have hinted [CW, July 1], IBM will announce support for the Open Software Foundation's Distributed Computing Environment (DCE) across most of its major architectures. It will do so by introducing AIX/ESA for the System/390, analysts said.

IBM will also announce Posix-compliant AIX implementations for the Personal System/2 and RISC System/6000. They will be based on a DCE kernel, ensuring interoperability with other DCE-based systems and native support of Transmission Control Protocol/Internet Protocol, Cassell said.

IBM has promised to define the Systemview data structure by the end of the third quarter so that applications developers can start using it. However, that is unlikely to occur next week.

Another expected announcement is the long-awaited integration of IBM's two disparate workstation programs for Netview: Graphics Monitor Facility, which is part of IBM's long-term Systems Application Architecture strategy, and Net Center, which IBM purchased from US West several years ago.

The amalgamation will give Graphics Monitor Facility the ability to update its icons and map topologies with data from non-Systems Network Architecture devices, Cassell said.

## CORRECTIONS

In *Computerworld*'s July 22 "Product Spotlight," Information Builders, Inc.'s Focus/EIS for Windows was described as not having applications development capabilities. In fact, it provides an object-oriented executive information system development environment.

.....

Hewlett-Packard Co.'s reduction in work force was incorrectly described as a layoff [CW, July 29]. The early retirement program is voluntary and is not offered to any sales employees.

.....

Apple Computer, Inc. was not the host of Macworld '91 [CW, Aug. 12]. International Data Group sponsored the show.


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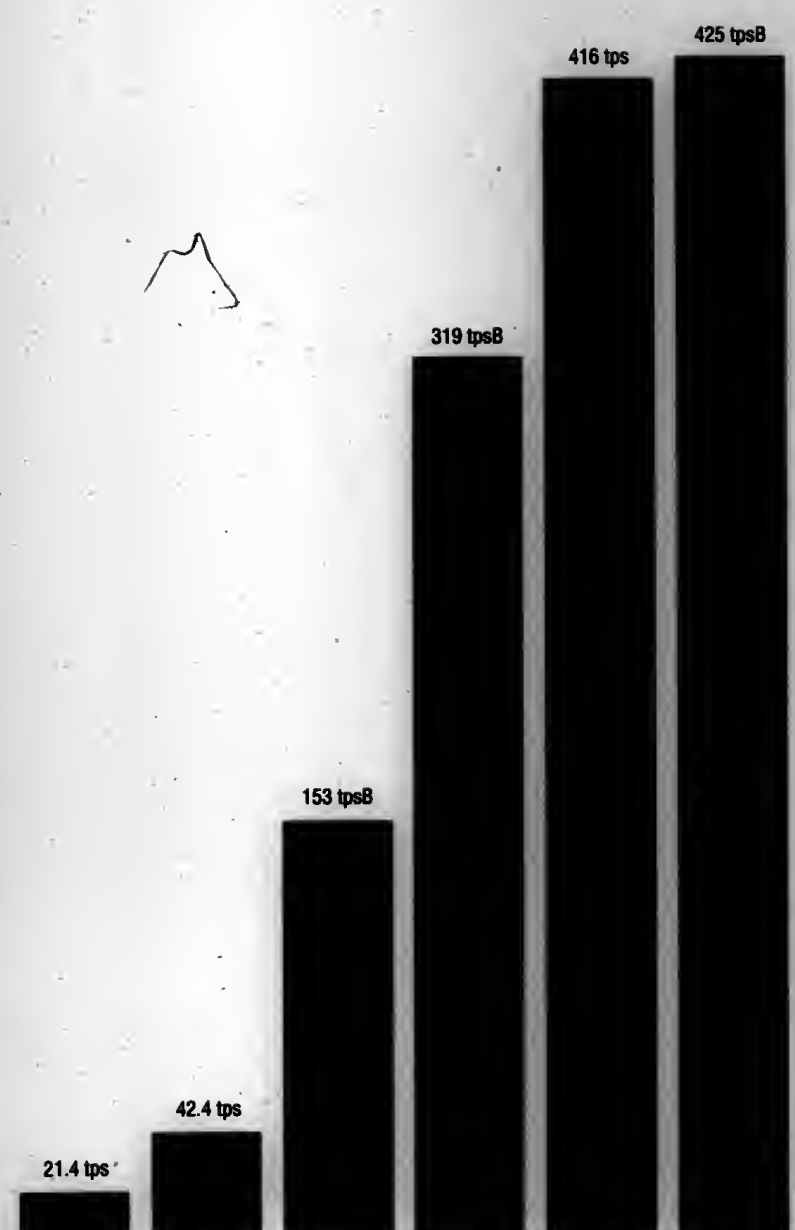


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# AS/400 entry point to plummet to $12,000

BY MARYFRAN JOHNSON
CW STAFF

NEW YORK — IBM is expected to follow up Labor Day weekend with the announcement here on Wednesday of a new low-end midrange computer at workstation prices: the Application System/400 Model D2, which will sell at a base price of $12,000, according to industry sources.

Another interesting twist for the small AS/400 will be IBM's offer of a 90-day money-back guarantee on "plug and go" systems, which come preloaded with application software from selected third-party vendors such as HTE, Inc. and Wall Data, Inc.

"If you don't like it, you can put it back in the box and send it back to IBM," one analyst familiar with IBM's plans said. "That may be a first in the computer industry."

**LAN substitute**

The Model D2, which IBM will pitch especially to companies with remote offices requiring more than a personal computer, will be similar to the current low-end C4 model.

"IBM will be pushing the D2 as a local-area network substitute," an analyst briefed on the announcement said last week. "Basically," the analyst continued, "they will pitch to places with completely support-free environments — places where no customer engineer has to come in and set it up."

The current low-end D4 model retails for $16,250 but comes with only 800M bytes of disk storage compared with 1G byte of direct-access storage devices on the D2 model. The base price of the D2 will also include the OS/400 operating system, 8M bytes of main memory and a cartridge tape for backup purposes.

IBM officials are also expected to announce Posix compliance in the OS/400's future as well as the development of a new interface to make mainframe-based CICS commands understandable to the AS/400.

Posix, or Portable Operating System Interface, is an evolving set of application programming interface standards intended to make software portable across open systems environments.

Adding the CICS interface will make more sense to customers when the high end of the AS/400 line takes on more mainframe tasks, such as transaction processing, analysts said.

# Bachman on Warehouse team

*Firm announces team strategy to ease user access to corporatewide data*

BY ROSEMARY HAMILTON
CW STAFF

Bachman Information Systems, Inc. broke with tradition last week by announcing ahead of IBM that it will be a player in the computer giant's newest Systems Application Architecture (SAA) strategy, Information Warehouse, which is scheduled to be unveiled Sept. 11.

The warehouse is expected to be IBM's grand strategy to provide users with easier access to corporatewide data. Observers said they are expecting it to be a major piece of IBM's large-systems announcement next week.

The software company's statement is an unusual move in that it sidesteps the gag order IBM usually imposes on business partners prior to an announcement. Information Builders, Inc., which most industry observers said is another key Information Warehouse partner, provided no comment when asked about the IBM strategy last week.

An IBM spokesman also had no comment when asked about Bachman's statement.

Bachman, which maintains a close relationship with IBM, markets design and analysis tools and is best known for its re-engineering software for IBM's DB2 relational database management system.

The Information Warehouse is expected to provide a framework for users to access data that resides in various places throughout a corporation. The goal is to give users a standard method of access based on SQL.

Then, through a complex set of mechanisms and technologies at the back end, IBM intends to provide a system that extracts data from different databases and moves it to a temporary storage database, or warehouse. This warehouse can then be accessed by users.

**Re-engineering help**

In an interview last week, Arnold Kraft, Bachman's president and chief executive officer, said the company was selected as an Information Warehouse partner to provide its expertise in data modeling and re-engineering.

The company is also a business partner on the two other SAA strategies, AD/Cycle and Systemview, and has been working with IBM to develop the core data models, or blueprints, for these initiatives. AD/Cycle addresses applications development, while Systemview is intended to provide a framework for systems management.

"The warehouse is designed to help people get at information stored in a database somewhere that isn't always easily accessible," Kraft said. "So first, you can use our tool to show the entities, attributes and relationships about the database itself to understand what's really there structurally. We can present it graphically, saying, 'Here's a picture of what's in that database.'"

Industry observers said they have been expecting IBM to present the Information Warehouse as another strategy initiative, which means it would at first be long on concept and short on full functionality.

IBM is also expected to roll it out with a set of key business partners such as Bachman, which will contribute key techology pieces. Then, a set of second-tier companies will likely announce support of the strategy.

Bachman also said it plans to announce a tool for AD/Cycle on Sept. 11. The firm will introduce Bachman DBA/Repository Services, which will provide a link to IBM's Repository Manager software. The tools will allow data generated from the Bachman Database Administrator software to be loaded and stored in Repository Manager.

# Knowledgeware scoops up Intellicorp

BY ROSEMARY HAMILTON
CW STAFF

ATLANTA — Knowledgeware, Inc. added another piece to its expanding portfolio of software tools last week with the announced acquisition of Intellicorp, Inc., a maker of expert system tools for Unix environments.

Intellicorp is the fourth acquisition for Knowledgeware this year and its latest step toward becoming more than a computer-aided software engineering (CASE) company in the IBM mainframe world. It wants to be a broad-based tool supplier.

"They don't want to be the classic software company that has a success with its first product and never gets beyond that," said Vaughan Merlyn, a partner at the Ernst & Young Center for Information Technology and Strategy in Boston.

Knowledgeware made its mark as a front-end CASE tool provider, and its Information Engineering Workbench is installed at thousands of user sites.

The company said that although it may be moving beyond mainframes, it is not shifting away from its commitment to IBM and its applications development strategy, AD/Cycle. Instead, the goal is to address customer requirements that include more than mainframes, said Pete Privateer, vice president of strategic product planning at Knowledgeware.

To underscore that point, Privateer said the company will soon announce enhancements to its products for AD/Cycle, including an improved version of its Repository Enablement Facility, which links Knowledgeware products to IBM's Repository Manager.

**Branching out**

The recent shopping spree is part of an overall strategy announced earlier this year that is taking Knowledgeware to new platforms and into several new applications development areas. It also reflects the consolidation under way in the CASE market since late 1989, according to Ed Acly, director of software research at Technology Investment Strategies Corp. in Framingham, Mass.

"The business has drifted to the upper tier vendors, and the lower tier ones haven't had enough money coming in," Acly said. "Often, they don't have the money to keep going. What you are seeing with Knowledgeware now is very characteristic of this industry."

Although the expansion plan is based on a clearly defined list of nine product priorities, details are sketchy as to when many products will be available or to what extent they will be integrated with the existing product line.

Knowledgeware said it will eventually market tools for the development of client/server, cooperative processing and object-oriented applications.

In addition, it said it plans to release tools for other platforms, including Unix and the IBM Application System/400. According to Privateer, some product announcements should come within 12 to 18 months.

Industry observers said last week that the strategy is a smart move for Knowledgeware because most end users need more than front-end design and analysis products to address their applications development requirements.

While analysts generally considered it a solid strategy, they also suggested that Knowledgeware may have difficulty integrating this array of products — at least four of which come from outside the company — into a compatible set of tools.

"Managing all these technologies will be a tremendous task," Acly said. "Before, they had a fairly orderly set of things, but trying to pull all this together will be a really big job."

Since January, the company has picked up client/server and cooperative processing technologies from the acquisitions of two small companies, Quinsoft and UDM Technologies. More recently, it acquired Language Technology, Inc., which sells Cobol restructuring tools.

The integration issues Knowledgeware faces depend on which products are involved, Privateer noted. For example, the Unix products from Intellicorp may not be fully integrated with the existing CASE tools because the target user bases are different.

The restructuring tools, however, will "clearly be brought into the fold," Privateer said. He did not provide a time frame.

**In the market**

*Knowledgeware has expanded its CASE capabilities with four acquisitions this year.*

**Company at a glance:**

**Founded:** 1979 **Number of employees:** 841

**Revenue:** $124 million (Year ended June 1991)

**Number of licenses sold:** 64,000

**Key products:** Information Engineering Workbench, an MS-DOS-based set of CASE tools; and Application Development Workbench, an OS/2-based set of CASE tools

**1991 Acquisitions:**

| Company | Technology | Status |
|---|---|---|
| Intellicorp | Unix-based client/server development tools | Available |
| Language Technology | Cobol restructuring/ maintenance | Available |
| Quinsoft | Object-oriented, client/server | Under development |
| UDM Technology | Cooperative processing tools | Under development |

# Info Builders releases revved-up 4GL

*Users performing overnight batch reporting or running ESA gain speed with Hiperfocus*

BY JOHANNA AMBROSIO
CW STAFF

NEW YORK — Information Builders, Inc. last week announced a new, high-performance version of its Focus fourth-generation language.

Called Hiperfocus, the package will be available in stages at the end of this month and will run on IBM mainframes under MVS/ESA. There are no current plans to port Hiperfocus to other platforms, according to Alan Gerber, an Information Builders project manager.

Gerber said the souped-up Focus should appeal to customers that do overnight batch reporting and to users who run Enterprise Systems Architecture (ESA) or are getting ready to move to ESA. Depending on the nature of the jobs being run, Gerber said, Hiperfocus is 20% to 30% faster — on average — than the standard-issue Focus.

Several Focus components were rewritten to produce better performance, he said. The general philosophy was to use ESA's reliance on internal processor memory rather than having to go out to disk drives or other storage devices to get the data.

Hiperfocus uses ESA's Hiperspace facility, which allows volumes of data to be moved directly into the CPU and thus saves the time that used to be required to fetch data from the disk drives.

However, it is for this reason — reliance on processor memory — that Hiperfocus will likely require more memory than does Focus, Gerber said. He said the exact memory requirements have not been determined; the product is still in beta testing among a "small" group of users be declined to identify.

Vaughan Merlyn, a partner at Ernst & Young in Boston, said Hiperfocus should appeal to users who wish to speed up their Focus applications. "There are a lot of big Focus applications, and this might give them better performance," he said.

### Versions soon to ship

The first version of Hiperfocus will be available later this month and will include new storage management and a rewritten I/O subsystem. The second release, with sort enhancements and support for IBM's VSAM, will ship by April 1992, the company said. A base Focus license is required, and the Hiperfocus option will range in price from $13,300 to $22,000, depending on the configuration.

Separately, Information Builders said it has been designated an IBM business partner/industry applications specialist. The two will market Hiperfocus for Enterprise System/9000 and ES/3090 mainframes. Hiperfocus was developed jointly by the two companies in a project that began about two years ago.

An Information Builders spokesman said the joint development deal was not the first for the two companies. "We've been working with IBM on AIX [Unix] products and in our Enterprise Data Systems Division." Enterprise Data Systems concentrates on Focus for client/server environments and "spans all platforms," the spokesman said.

# IBM ups costs on older lines

BY ROSEMARY HAMILTON
CW STAFF

IBM issued price changes last week that boost the cost of some older equipment by 5% but leave most of its newer products untouched.

The announcement came as a standard price increase statement from IBM in which it states its plan to hike prices and follows it with a long list of items that will be excluded.

However, the company also announced price cuts for a few items, including a whopping 37% cut on VM/ESA for its low-end 9370, which was renamed the Micro Channel 370 last year. The price cuts are effective immediately.

The 5% price increase goes into effect in January 1992 and includes 3090s, 9370s and 4381s. System/370 and Application System/400 software licenses will also go up by 5% at that time. Most tape drives and printers are also included.

IBM issued a list of specific items that will be excluded from the price increase including the following: Enterprise System/9000s, RISC System/6000s, AS/400s, Personal System/2s, PS/1s, System/88s, high-end disk drives and controllers, Token Ring and non-Token Ring local-area-network cards and retail point-of-sale terminals.

Also excluded from the price increase are maintenance and educational services and any products that were announced after June 1, 1991, or for which price changes were announced after that date.


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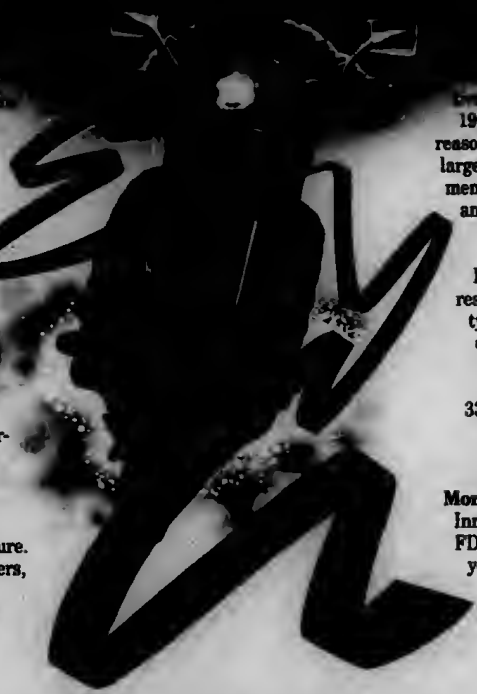

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# NEWS SHORTS

### New DR-DOS on call

Digital Research, Inc. is expected next week to unveil an aggressively priced DR-DOS 6.0 that reportedly frees up to 632K bytes of main memory by loading even more code into high memory. The announcement of the $99 package follows the May release of Microsoft Corp.'s DOS 5.0. DR-DOS 6.0 also features Diskwarz and Taskwarz. Diskwarz is an optionally invokable file-compression system said to increase disk space by 100% or more. Taskwarz is a task-switcher capable of loading up to 20 applications at once and switching, cutting and pasting among them. Other additions include fast disk caching based on Multisoft Corp.'s Super PC Kwick; the ability to recover accidentally erased files and to "defragment" hard disks; file, subdirectory and disk partition security; and a full hypertext facility that puts most documents on-line.

### UPS plans second European center

United Parcel Service, Inc. last week announced a multimillion-dollar, three-year contract under which German carrier Deutsche Bundespost Telekom will set up, operate and manage the package handler's second European telecommunications center. UPS' European circuits currently flow through a hub located in the UK and operated by British Telecom PLC.

### MCI loads up on storage

Citing large memory requirements for new MCI Communications Corp. billing systems, the $7.7 billion phone services firm said last week it had ordered more than 1T byte, or 1 million megabytes, of disk drive storage from Hitachi Data Systems Corp. in Santa Clara, Calif. HDS is filling the order with an undisclosed number of HDS 7380 disk drives, each capable of holding up to 22.7G bytes of data. A single terabyte of HDS 7380 memory costs roughly $12 million.

### ACE stocks up on vendors

The Advanced Computing Environment (ACE) consortium swelled its ranks from 60 to 65 member companies last week, adding a host of personal computer vendors and software developers. Established in April and led by Digital Equipment Corp., Microsoft and Compaq Computer Corp., ACE is attempting to develop a new desktop standard for reduced instruction set computing. Among the new members are Megatrends, Inc., Everex Systems, Inc. and South Korea-based Samsung Software America.

### Hasta la vista, space cadets

Ground control to Major Applefield? Actually, it was the other way around for the space shuttle crew aboard the Atlantis, which sent the first electronic mail message from space to ground control last month during the Aug. 2-10 mission via Apple Computer, Inc.'s AppleLink software. The message read in part: "Hello, Earth! Greetings from the STS-43 crew . . . Having a GREAT time, wish you were here . . . Hasta la vista, baby . . . We'll be back."

### Cadam enhances tool family

Cadam Co. recently announced significant upgrades to its Micro Cadam tool family. The Burbank, Calif.-based computer-aided design and manufacturing vendor, which was acquired by IBM in early 1990, announced enhancements to the following products: Micro Cadam Plus, Cornerstone, 3D, Data Transfer, Geometry Interface and Data Exchange.

### Sterling buys services firm

Sterling Software, Inc. announced plans to purchase Knowledge Systems Concepts, Inc., an engineering services firm that works primarily with the U.S. Department of Defense. Sterling said the company would become part of its Intelligence and Military Division, based in Bellevue, Neb. The acquisition is subject to completion of a definitive agreement.

*More news shorts on page 100*

# Link promises off-site storage

*Users to be able to link up with storage facilities throughout the nation*

BY ELISABETH HORWITT
CW STAFF

MINNEAPOLIS — Network Systems Corp. is expected to announce tomorrow the first product to provide high-speed, long-distance links between IBM host channels and direct-access storage devices (DASD).

The product will enable users for the first time to locate backup and primary storage facilities anywhere in the country, independent of data center location, the vendor said. Even Network Systems' competitors acknowledged that this is a major industry breakthrough.

**Chemical Bank's Mayer** *wants cheaper remote data storage*

The company said it has enhanced its Remote Device System channel extension units to support DASD over Fiber Distributed Data Interface (FDDI) local-area networks and over standard wide-area network circuits of up to 45M bit/sec. The enhancements are available now.

Network Systems is not the first firm to try to stretch the umbilical cord between IBM host and hard-disk storage devices. Data Switch Corp. in Shelton, Conn., has offered a channel-based host-to-DASD link over distances of up to 1,300 feet for a couple of years now. IBM announced last September that its fiber-based Enterprise Systems Connection will support DASD devices over distances of up to 9 km, or about 5.6 miles.

However, when a major disaster hits, companies want their DASD and data centers not down the block from each other but in separate cities or even states. "Companies like us that are moving to remotely operated, large-utility data centers need to come up with more economical ways to reduce risk," said Jim Mayer, senior vice president and director of technology infrastructure management at Chemical Banking Corp.

As one way to economize, Chemical Bank said it plans to explore the possibility of having several data centers share remote storage and backup DASD facilities without the need to equip each facility with a computer, Mayer said.

Network Systems' introduction should meet these needs by providing host channel-to-DASD links over virtually unlimited distance — a capability its major competitors have not yet managed to produce.

Announcements such as Network Systems' and IBM's are helping to move IBM host systems "out of the glass house and into a more network-like environment," said Rick Villars, director of computer network architectures at International Data Corp. in Framingham, Mass. This, in turn, enables users to locate different parts of the system more flexibly and economically, he added.

#### Jumping a hurdle

The obstacle to long-distance, channel-to-DASD links is the need to deliver a read instruction when the head is in exactly the right place, Network Systems spokesman Frantz Corneille said. The vendor got around this problem via host software that sends an entire data sequence to the Remote Device System controller, which then processes it and sends it to the disk.

Network Systems' FDDI-based host channel connection, which can interconnect multiple hosts and peripherals at 100M bit/sec., is another first, industry sources said. Chemical Bank would be interested in the FDDI link, which can extend over several miles, as a way to move DASD units from its overcrowded data centers to nearby buildings, Mayer said. In-Net Corp. and Computer Network Technology Corp. both promised delivery of channel-to-FDDI products within the next few months.

Network Systems' Remote Device System product is priced between $32,500 and $63,000, depending on the combination of modules installed.

# AMD slams

FROM PAGE 1

desktop computers. According to Sunnyvale, Calif.-based AMD, Intel did so in two ways. AMD alleges Intel sabotaged a contract between the two firms, allowing AMD to license Intel 80386 technology in its own AM386 product.

Intel also coerced PC OEMs into rejecting AMD chips in favor of Intel goods, AMD charged.

The Federal Trade Commission began investigating anonymous allegations of this kind in July.

#### Score tactics

An AMD spokesman said Intel also uses the courts to intimidate competitors — an accusation thrown back at AMD by Grove. "Since they can't win in the marketplace, they try to defeat us in the courts and press," Grove said.

"AMD certainly is making every possible effort to draw attention to its position in its arbitration case with Intel," said Bill Tai, an analyst at Alex. Brown & Sons, Inc. in San Francisco. Tai was referring to the binding arbitration AMD forced on Intel to settle complaints about the AM386 contract.

In the arbitration, Intel was found to have breached the contract by deliberately seeking to hold up technology transfers required by the agreement.

The arbiter is now deciding how AMD should be compensated.

"There are those who argue that Intel's influence in the marketplace is so powerful that it could be construed or misconstrued as [monopolistic] intentions," Tai said. "Intel is in a position to make or break its customers' market share."

Tai said he is unaware of any incidents like this happening but said he is "sure there have been incidents of some loose-cannon salesmen." Tai added that he doubts there ever was a management policy to financially harm vendors using AMD chips.

At least one component distributor has stated publicly that Intel cut off his supply of the company's products when he refused to stop pushing Cyrix Corp. math coprocessors [CW, July 1]. Two PC components vendors that asked to remain anonymous also said they have been pressured by Intel to use its products.

#### Sitting on the fence

At Northgate Computer Systems, Inc. in Eden Prairie, Minn., Chairman Arthur Lazere did not take sides in the AMD/Intel conflict.

"At this point, I haven't heard anything that would cause me concern. Interesting squabble, but nothing alarms me," Lazere said.

A spokesman for IBM noted, "I think it will have no effect on us. Through a technology exchange agreement, Intel gave us a license to actually process these chips. We do this in relatively small quantities for internal products. We will continue to buy the bulk of our 80386 chips from Intel. It is not appropriate for us to comment on the potential outcome of the case."

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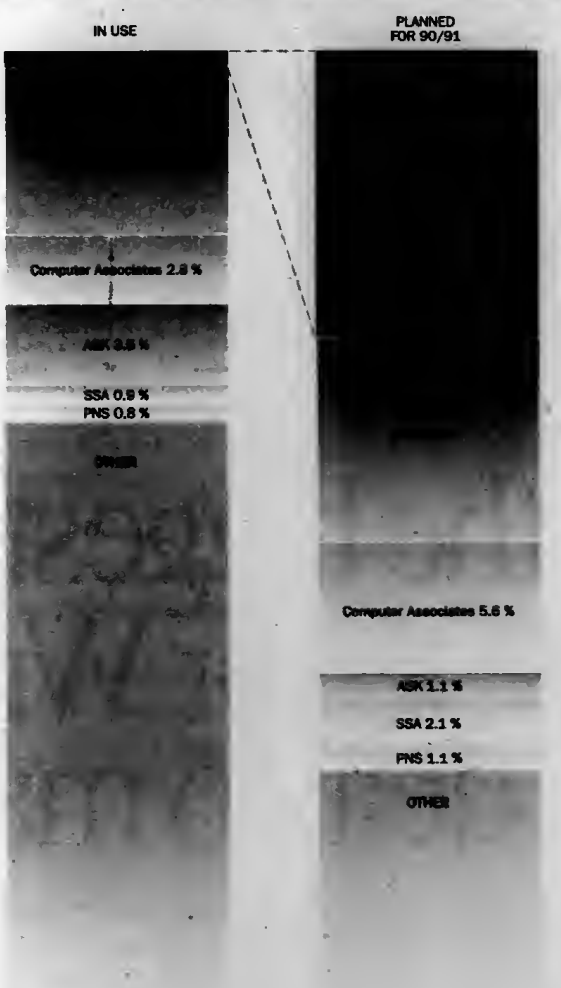


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# Extending Unix reach, Fujitsu sinks $40M in Hal

BY KIM S. NASH
CW STAFF

To further bulk up its stature in the Unix ring, Japan's largest computer maker last week invested $40 million in exchange for 44% of Hal Computer Systems, Inc., a 1-year-old start-up firm in Campbell, Calif.

Fujitsu Ltd., whose sales topped $20 billion last year, is continuing its strategy of buying stakes in non-Japanese companies that can provide an entree for the Toyko-based company into the worldwide Unix market. Fujitsu owns parts of London's International Computers Ltd. and mainframe maker Amdahl Corp. in Sunnyvale, Calif.

Both firms manufacture mainframe-class systems that can run a version of AT&T's Unix System V operating system.

Hal has not yet delivered any products, but that is unimportant because "Fujitsu is buying its future," said Rikki Kirzner, senior analyst at market research firm Dataquest, Inc. in San José, Calif.

Fujitsu said it and Hal will "put special emphasis" on co-developing high-performance commercial Unix systems based on Sun Microsystems, Inc.'s Scalable Processor Architecture. Hal's founder, Andy Heller, helped develop IBM's RISC System/6000 workstation.

That plan raises the question of whether the new Hal machine may compete directly against Amdahl's low-end mainframes. Neither Hal nor Fujitsu addressed this concern at last week's announcement.

However, at least one analyst did. "Both products could be positioned as high-end servers, and one of them would ultimately win out," Kirzner speculated. That might spell doom for whichever company lost the battle.

Heller founded Hal, which was named for the intelligent computer in *2001: A Space Odyssey*, in May 1990 to make and market high-performance commercial Unix systems.

## Staking its claim

Fujitsu has spent more than $2.4 billion in less than a year, driving its plan to born in on the worldwide Unix market via investments in non-Japanese companies that sell high-end Unix machines or Unix software.

Fujitsu's $40 million investment in Hal Computer Systems, announced last week, cost the Japanese computer maker less than other recent ventures did, however. In November 1990, for example, Fujitsu footed a $2 billion bill for 80% of London-based International Computers Ltd. (ICL). ICL recently acquired Stockholm-based Nokia Data Systems, whose Helsinki, Finland-based parent company, Nokia Group, has a seat on ICL's board of directors as part of the deal.

Fujitsu has also upped its stake from 38% to 85% in Poqet Computer Corp., a Santa Clara, Calif.-based laptop maker. Fujitsu produces the Poqet computer in Japan. Fujitsu Canada, Inc., a wholly owned subsidiary, was recently formed to sell Fujitsu's entire product line — from supercomputers to personal computers — to Canadian businesses.

In the spring of this year, Fujitsu bought almost 75% of the Products Division of Fulcrum Communications Ltd., which is a subsidiary of British Telecom, Inc.

# Los Angeles raids net $1M in pirated Microsoft packages

BY MICHAEL ALEXANDER
CW STAFF

REDMOND, Wash. — Microsoft Corp. said last week that it had foiled a band of software bootleggers in Los Angeles who were nabbed with counterfeit copies of MS-DOS and Windows with a street value of more than $1 million.

In raids at four businesses in the Los Angeles area on July 20, U.S. marshals seized nearly 20,000 illegal packages of MS-DOS 3.3, 4.01 and 5.0 and Windows 3.0 as well as illegal duplicates of disks, packaging, manuals, warranty cards and other items that are packaged with Microsoft software, said Jim Lowe, the corporate attorney responsible for handling domestic piracy matters for Microsoft. The marshals also seized the equipment to produce the bootleg software.

Microsoft is seeking treble damages, a permanent injunction and attorneys' fees in a complaint filed July 19 with the U.S. District Court for the Central District of California in Los Angeles. Microsoft has also asked the U.S. attorney for the district to file criminal charges in the case.

According to Microsoft, genuine packages of Microsoft MS-DOS 5.0 and MS-DOS 5.0 Upgrade are marked with holograms that are visible when the package is tilted.


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## TECH TALK

### Monsoon blows into town

■ Motorola, Inc. recently delivered its prototype Monsoon dynamic data flow computer system to MIT. The prototype was constructed to demonstrate practical scalability and programmability, allowing a program to run on one to thousands of processors without modification and with improved performance. Monsoon consists of eight 64-bit processors and eight 32M-byte memory elements interconnected by a high-speed packet network. Each processor is capable of processing up to 10 million data-flow tokens per second, Motorola said. The project is a joint research effort between MIT and Motorola Computer Group's Cambridge Research Center and Advanced Technology Laboratory.

### Desktop computer action

■ Macromind, Inc., a multimedia software company, has introduced a package called Action, which the company said allows users to create multimedia presentations instantly. The program comes with dozens of canned templates to which users can add their own text, sound or graphics to create personalized presentations. It also includes a clip media library of special sounds, still images and animated graphics. Macromind said the product will ship this month with a suggested retail price of $495.

### HDTV pact

■ Texas Instruments, Inc. is negotiating with Fujitsu Ltd., Sony Corp. and Hitachi Ltd. to pool resources to develop semiconductors for high-definition television (HDTV), the companies said last week. HDTV is the latest bid to bring the quality of 35mm film and compact-disc audio to television. The technology is also expected to have a wide impact on consumer electronics, computers, medical instrumentation and several other technologies. It remains unknown whether consumers will be willing to pay more for better quality television pictures, however.

# Digitizing enters third dimension

*Using a digitizer and a PC, 3-D models are being created for various applications*

BY CLINTON WILDER
CW STAFF

The daring high-technology feats of Arnold Schwarzenegger and Linda Hamilton to save the world in the film *Terminator 2* have something in common with real-world efforts to save severe burn victims, find lost children and develop artificial limbs.

It is called three-dimensional digitizing technology — the real-time scan and capture of a three-dimensional object in digital form. Its applications range from the whimsical to the lifesaving, but they all stem from technology developed by Cyberware Laboratory, Inc., a family-owned, 11-employee company in Monterey, Calif.

Cyberware's 4020/PS Rapid 3-D Digitizer uses patented laser scanning technology to circularly scan a 3-D object, such as a person's head, in about 15 seconds. Once captured, the 3-D image can be manipulated on a Silicon Graphics, Inc. workstation or personal computer with a Silicon Graphics add-in board. Software instructions sent to a milling machine can then create a 3-D model in foam, plaster or other materials.

"Basically, it's a 3-D Xerox," said Lloyd Addleman, Cyberware's 64-year-old director of engineering and father of company President David Addleman and Services Vice President Stephen Addleman. Cyberware's roots began after Lloyd Addleman "got bored" and combined his interests in technology and fine arts to build a sculpture machine to help artists working in three dimensions.

"But sculpture is not a great market," he said, "so we decided to look for other applications." Cyberware was founded in 1982 and has since made a major mark on many science fiction movies, among them *Star Trek IV, The Abyss, Robocop II* and *Nightmare on Elm Street*. Many film stars have been digitized at Cyberware offices.

After an actor's head is digitized by Cyberware, special effects experts from firms such as Industrial Light and Magic can stretch, distort or "liquify" that image for special effects.

**Cyberware's 4020/PS Rapid 3-D Digitizer** *allows an object to be captured as a '3-D Xerox'*

In the real world, 3-D digitizing has found dozens of applications, and Cyberware customers are as far away as Scandinavia and Singapore. These are some of its users:

- A doctor in Salt Lake City who plans plastic and reconstructive surgery based on 3-D images of patients.
- The Royal Dental College in Copenhagen, which uses the digitized images to help teach students dentistry and orthodontics.
- 1989 *Computerworld* Smithsonian Award winner Lewis Sadler of the University of Illinois, whose computerized "aging" of missing children now employs 3-D technology for even more accurate imaging to help find the children.
- NASA's Ames Research Center at Moffett Field, Calif., which has cut its computational flow dynamics calculations from six months to one day by processing Cyberware 3-D data on Cray Research, Inc. supercomputers.
- Computer-aided design and manufacturing (CAD/CAM) users, such as toy makers, scan a 3-D prototype and then manipulate the digitized image, rather than the more costly reworking of a physical object.
- Wright-Patterson Air Force Base near Dayton, Ohio, where researchers study 3-D images of jet fighter pilots' heads and faces to help design better fitting helmets, masks, earphones and optical systems.

Wright-Patterson has had a Cyberware 4020 and Silicon Graphics workstation for three years and has digitized about 1,000 subjects. Before 3-D digitizing, measurements for helmets were taken with calipers and tape measures, according to research physical anthropologist Kathleen Robinette.

Wright-Patterson sends the digitized image data to equipment designers in whatever form they prefer: an ASCII or binary file, a file for a particular CAD system or a physical model created by Cyberware's milling machine.

Cyberware, with annual revenue of about $1 million, said the applications for 3-D digitizing technology are practically unlimited. "So far, our marketing has been people hearing about the technology and saying, 'I can use that in my business,' " Stephen Addleman said.

# Intel ships first large-scale supercomputers

BY MICHAEL ALEXANDER
CW STAFF

The Intel Supercomputer Systems Division of Intel Corp. has begun shipping what it said is the first large-scale parallel supercomputers for real-time, embedded supercomputing applications. Intel has received orders for 30 systems so far for its IWARP parallel computers.

The largest of the IWARP computers is a 256-processor system offering performance of 5 billion floating-point operations per second (GFLOPS).

The parallel machines will be used for antisubmarine warfare, radar and sonar signal processing, infrared image processing, robotics, numeric control and neural network simulation. The Pentagon's Defense Advanced Research Projects Agency is also planning to use an IWARP system in its High-Definition Display Technology program, an Intel spokesman said.

"The need for real-time supercomputing has been satisfied by special-purpose designs for specific applications," said Les Furnanz, IWARP program manager at Intel's Supercomputer Systems Division. Intel's IWARP systems provide "off-the-shelf" solutions to real-time supercomputing requirements, he said.

James Wheeler, a researcher at General Electric Co.'s Research & Development Center in Schenectady, N.Y., recently used an Intel IWARP parallel computer to demonstrate an advanced sonar detection technique called adaptive beam interpolation (ABI).

The computational load — on the order of billions of FLOPS — has been a stumbling block in developing the next-generation radar and sonar systems based on the ABI technique.

ABI is a passive sonar-detection method that, like the conventional approach, attempts to minimize sound energy from surface ships or other potential sources of noisy interference in order to detect quiet sounds from nearby submarines.

Sonar systems based on ABI techniques promise markedly improved sensitivity, based in a large part on the number-crunching potential of parallel computers.

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## EDITORIAL

# Labor daze

These days, there's a curious phenomenon — one that rears its head frequently when you ask someone in information systems or in the computer industry the quintessential chitchatty question, "How's work?"

The most common answer seems to be, "Well, I still have my job."

While our friends in Washington, D.C., continue to say the recession is over — a message bound to get louder as the big election year approaches — the level of job-loss anxiety among information technology professionals is not abating one iota. In fact, it seems to be getting worse.

Recently, one of our staff members contacted several sources in the user community in an attempt to recruit one for a conference session at the upcoming Comdex show in Las Vegas. Several of them, who ordinarily would attend the conference, said they felt it most prudent to "stay close to home" this year. A few others flat-out noted that they or some of their colleagues just might not be on the job that far in advance. Comdex is in late October this year.

So while Wall Street cheers as the computer vendors shed thousands of workers and the user community — fueled by megamergers and corporate takeovers — does its own shrinking act, the plight of the information technology worker gets more tenuous each day.

It's hard to imagine that this situation isn't taking a toll on productivity. A recent published report told of IBM employees putting in a lot of extra time at their keyboards. But what they are doing is grousing to one another over the company's electronic mail system, lamenting the hard-nosed, no-longer-business-as-usual messages that have come from Chairman John Akers' office this summer.

The situation is probably no different at DEC, Unisys, Bank of America, Security Pacific or Chase Manhattan. People are afraid of losing the only thing they value more than life itself — their jobs!

Apart from the spouses and confidants of these troubled workers, does anyone else care? If you are a manager, you certainly should. You're only as good as the work your subordinates do, and if anxiety is sapping their creative juices, well, you can figure out the rest.

Knowledge workers on the edge today do not need false assurances about job security. They won't believe it anyway. Instead, this seems a time to consider more basic approaches that tell the programmers their work this week really was appreciated — and noticed. It might also be an idea to remind people of short-term goals they can focus on and then feel good about when they are achieved.

In short, this is a good time to reconstitute the humanistic aspects of managing the knowledge worker. A little dignity can go a long way to ease even the burden of job insecurity in these difficult times.

## LETTERS TO THE EDITOR

### Missed the mark

Imagine my reaction when *Computerworld* stated the following about the IBM Personal Computer in its Aug. 5 issue:

- It was the first PC to include an interface to a home TV (our Color Computer did that in 1980).
- It was the first to be supported with a software publishing department (Tandy — 1978).
- It was the first to go unsupported by IBM-developed system software (no argument there).
- It was the first to include music and a joystick interface (Color Computer — 1980).
- It was the first to be introduced with a game as a primary program. (On Aug. 3, 1977, the TRS Model I was the machine that started this whole industry!)

I hope you're happy being right one out of five times.

*Ed Juge*
*Director, market planning*
*Radio Shack*
*Ft. Worth, Texas*

### Fool the investor

Regarding "Accounting change may deny rookies a fair shot" [CW, Aug. 12], Mr. Landry's credits are admirable and are those of a software entrepreneur and seeker of investor funds.

When growth is rapid, a point agreed to by Mr. Landry, the current accounting methods produce large paper profits. When times slow down, or the growth curve levels off, the expenses catch up and the result is a massive loss or significant drop-off in earnings per share. With a proper matching of revenue and expenses, the revenue bulge and expense catch-up never occur — they are in a normal relationship throughout the business life.

These are the things financial entrepreneurs feed upon — the rapid growth and relative ease of finding funding. But these same things cause the future problems — earnings collapse and stock values dropping.

It is not that the new company is at a disadvantage with the older company, as Mr. Landry states. It is that the investor may be misled by entrepreneurial accounting.

*Joseph H. Rodenberg*
*Management and Educational Consulting, Inc.*
*Indianapolis, Ind.*

### Catching the Apple

I was shocked by the pronouncement made in "Multimedia suffers standards lack" [CW, Aug. 12]. This is untrue. What it should more correctly say is, "Apple and Microsoft suffer standards lack."

What makes any article covering general computer multimedia suspect when it omits the Commodore Business Machines, Inc. Amiga is the "lowest common denominator" aspect.

Unlike the Macintosh and IBM-compatible systems, every Amiga ever made is multimedia-capable — applications designers are assured a platform where color graphics, digital stereo sound, NTSC/PAL video signal capability and an underlying operating system embodying real-time multitasking capabilities will be available — and that they will have a standard software interface to them.

While standards are admittedly lacking in the wider world, in practical terms things are hardly as grim as portrayed. Like it or not, the Amiga is not likely to go away — there is, by some accounts, one Amiga now installed for every four Macintoshes and gaining.

*Tim Holloway*
*President*
*MTS Associates, Inc.*
*Jacksonville, Fla.*

### Amiga still here

To all those mentioned in "Multimedia suffers standards lack" [CW, Aug. 12] who are facing problems in realizing this exciting new technology: You should be aware of the open architecture of Commodore Business Machines, Inc.'s Amiga, of which not a word was mentioned.

Users of the multimedia Amiga have been enjoying high-quality, low-cost multimedia for several years now. In addition to the hundreds of thousands of low-cost home systems in use, specialized configurations for professional video production, entertainment and education have been available for quite some time. What's more, compact-disc television and multimedia computer leasing are available — today!

So welcome to the wonderful world of multimedia!

*Rodger Silvers*
*Fairview Heights, Ill.*

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*Computerworld welcomes comments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Laberis, Editor In Chief,* Computerworld, *P.O. Box 9171, 375 Cochituate Road, Framingham, Mass. 01701. Fax number: (508) 875-8931; MCI Mail:* COMPUTERWORLD. *Please include a phone number for verification.*

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# DP could be the death of me

DONALD DUNN

Just when everyone was telling me, "Get a life," I got a job — a data processing job — and that was the end of that idea.

As a computer operator, I worked graveyard shifts Wednesday through Sunday and missed all of my neighbor Joe's weekend barbecues and all of my own family's midweek dinners.

Sleeping was difficult. Sometimes the sun came through the window and hit me in the face. Other times, I just woke up and couldn't figure out what day or time it was. The kids played while I either slept or lay awake wondering who had bought them that new drum and horn.

I wasn't getting enough sleep, but I needed more money, so I began moonlighting at another company, filling in for people who missed their shifts. In data processing, all jobs are moonlighting. I think computers must run better at night because that is when everything happens to them. It was hectic trying to avoid overlaps and get sufficient sleep. Let's see, do I get up when it is light or dark?

I soon received a promotion and moved to swing shift. This included a small pay raise and pay for shift differential. The raise was so small, however, that I decided to look for another job. I found it and started working graveyards again.

My new job was better, but the company couldn't keep people, so I had to fill in some days when people didn't show up to work, and there was the occasional back-to-back shift, 16 hours in a row. Eventually, I moved to days and the semi-occasional missed shift.

Then came a promotion. I was moved to production control on the graveyard shift. It wasn't bad this time. I got more money and, at least at first, more free time. I saw my wife in the daylight, discovered my toddler had become a teenager and found out that my skinny ties were "in" again.

My neighbor Joe had learned my former swing shift hours and now politely called at 5 p.m., my new sleeping hours. When the phone rang, I almost threw it against the wall thinking it was work wanting me to come in.

M. E. Cohen

"Yo, buddy, this is Joe. How about going fishing Saturday?"

I was dumbstruck. Someone who didn't want me to work. Then I began to wake up.

"Sorry, Joe, I can't. I'm afraid I'm on call and the lake is out of pager range."

"Hey, well, call me when you have a nervous breakdown or get fired," he said.

Does everyone with a job outside of data processing work nine to five and get off early on Fridays? I should check on this when I get some free time.

I must have done a good job in production control because I soon became a systems programmer. I actually worked days. Soon I was good at what I was doing and became "responsible." With responsibility came weekend work for upgrades to software and supervising of hardware installations. There went the barbecues again. And now my pager was really starting to interfere with my marriage. Midnight calls for problems with the computer popped up with consistent irregularity.

Well, I couldn't take it any more, so I switched jobs. Working hours at this company were humane, until I became familiar with the new system. After that, I worked my first weekend. As I finished the chore, my boss reminded me that there was no such thing as compensating time off and to be sure to be in Monday.

**All in a day's work**

Tuesday, I worked from 1 a.m. to 6 a.m., and the boss reminded me that I must work my regular eight-hour shift. At 4:59 p.m., some operating system problems cropped up, so it was 2 a.m. when I finally got to drive home. I was weaving in my lane, so a policeman pulled me over to make me take a drunk-driving test. I passed and explained about working in data processing, so he let me go. As I left, he muttered something about a sanity test.

When I got home, I realized Joe didn't call me anymore. So I decided to call him and finally set a date to go fishing.

"Joe, this is me, about that fishing trip . . ."

"It's %$&!* o'clock in the @!¢% morning! You kids quit calling me," was the response.

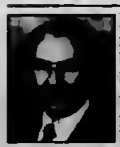
I don't think he realized who it was that called. That's OK. I really needed sleep more than fish anyway.

Dunn is still working in data processing, as a senior systems programmer in Carmichael, Calif. In his spare time, he is a free-lance writer.

# Job cuts can be crippling

*Recessionary adjustments take toll on loyalty*

GARY KAPLAN



In the '90s, job insecurity has become a fact of life. Horrific international competition and heavy corporate debt have pressured companies to cut their work forces on a scale not seen since the Great Depression.

We are now paying the piper for the excesses of the '80s. And the bill keeps rising. Swelling unemployment rolls are only part of the tab. Another, less obvious but no less serious cost is the sense of betrayal that workers now feel and the consequent erosion of company loyalty.

These problems, while certainly not unique to the information industry, are particularly pronounced in this field. Contraction has become a fact of life for those employed by hardware and software vendors, for consultants who cater to the industry and for the people who man the trenches within IS functions. The number of over-the-transom resumes that my recruiting company receives daily from information systems executives at all levels has quadrupled during the past year.

Banking is just one area where consolidation is taking a devastating toll on the ranks of the information systems function. When two banks come together, one of the efficiencies of scale they hope to obtain is a single IS function.

Therefore, every time you read about a marriage of two major financial institutions, you can bet that large numbers of data processing/IS professionals will be looking for a new job. It is also safe to say that many of these people joined their respective organizations believing that these positions would be secure, only to be left with a sense of shock, betrayal and possible disillusionment toward future employers.

**Executive exit**

After a decade of mergers and buyouts, downsizing and ongoing corporate upheaval, American business in general is suffering from an executive brain drain, with many skilled managers eagerly jumping off the corporate ladder. Having seen coworkers and upper echelon executives either "outplaced" or forced out, these people have decided corporate life is too stressful, too unrewarding and too insecure.

Unfortunately, many of these corporate dropouts have been the employers' best performers and many have been top performing IS professionals.

This is a dangerous trend in an age of tough global competition. U.S. corporations may well find themselves at a disadvantage in battling Asian and European competitors who can count on their fiercely loyal work forces.

Adding to the problem is the unfortunate fact that even workers who have managed to retain their jobs have often been scarred. Risk takers have become more cautious. They are terrified of doing anything that could cost them their jobs or dampen their chances for advancement. It is in this kind of climate that Yes Men and Yes Women are born and innovation dies.

There is little doubt that, in many cases, "rightsizing" is an absolute necessity. Many corporations have allowed themselves to grow far too fat. We should, however, be very careful about how we wield the cost-cutting knife, because we may be severing bonds that are important to our economic survival.

Kaplan is president of Gary Kaplan & Associates, an executive recruiting firm in Pasadena, Calif.

# There's no excuse for disorganized data

READER'S PLATFORM

BILL KALAFUS

The concept of data management preempts parochial views of data ownership — "department data," "application data," "my data" — with a broader picture that involves a sea of corporate data in which applications float, extracting, manipulating and producing derived data.

The trouble is that this sea is too big and too various to be useful and usable unless data items are recorded, grouped, computed or transformed. Some organizations haven't ventured far beyond clay tablets in this respect.

Data administration is built upon documentation about the data itself, about data relationships and the processes that manipulate the data. Currently, most documentation comes in the form of systems and user manuals that soon become obsolete.

The case for good documentation is obvious. But creating good documentation and keeping it up to date is frequently sloughed off with the excuse that "we don't have the time."

The panacea for data management put forth in the last few years has been the data dictionary and/or data repository. Many ideas and products have been run up the flagpole and some have come very close to not only slicing the bread but toasting and buttering it as well.

As a result, many IS managers are of the opinion that the costs of implementing and maintaining a data dictionary outweigh the advantages. This is an understandable reaction given the complexity of many products and concepts, but it is based on false assumptions.

A data dictionary can be very complex, storing code, data structures and formats. It can also be as basic as an on-line cross-reference.

Ironically, most of the entry work for data dictionaries is currently being done; even those IS organizations that say the cost of doing it is prohibitive are doing it. It is entered into manuals that soon become obsolete.

What we need to do is think big but simply. It is possible to create a data dictionary from a kernel module that is supplemented gradually. A journey of a thousand kilobytes starts with a single keystroke.

Kalafus is a data administrator at Tri-State Generation in Denver.

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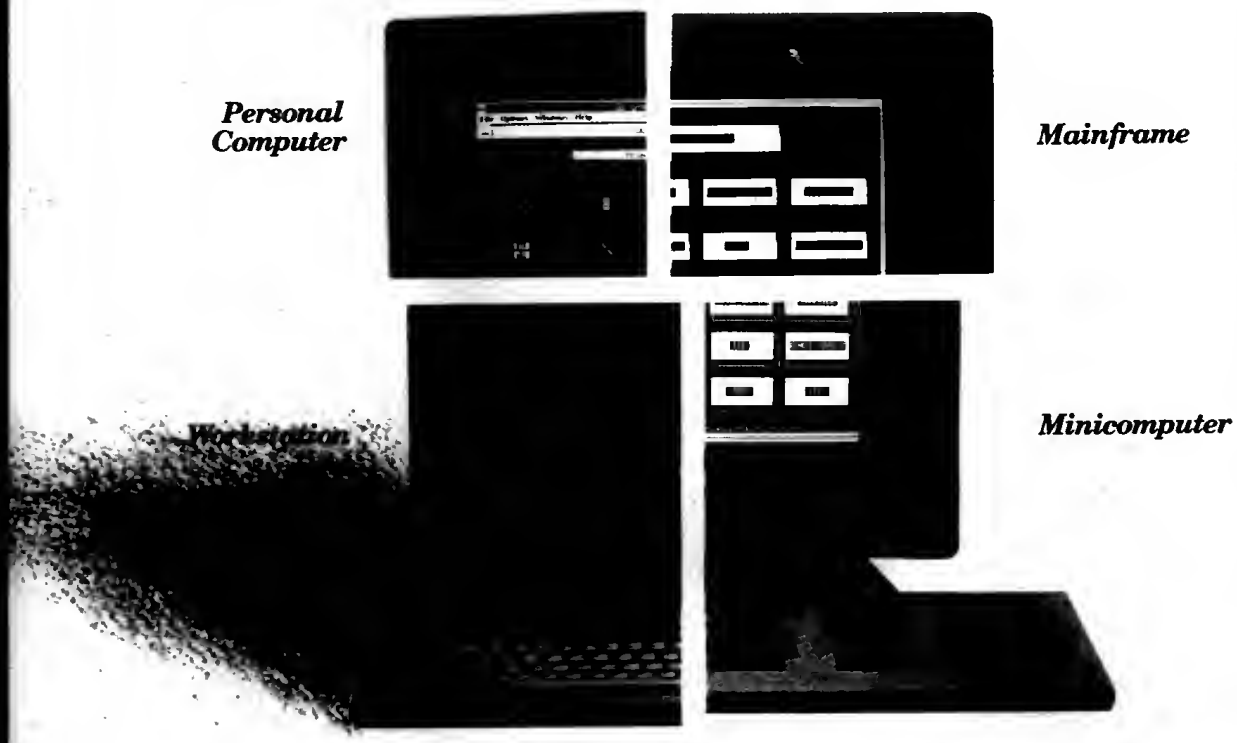
# No Matter How You Slice It

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SOFTWARE SHORTS

## Megabuck market

Federal mainframe use may be only one-quarter that of mainframe use at Fortune 1,000 companies, but **Computer Intelligence/Infocorp** reported that this market still represents a multibillion-dollar hardware business.

The **U.S. Air Force** ranks first in federal agency spending and also accounts for the largest percentage (21%) of mainframes installed by the federal agencies.

Still, the government is way behind the times in mainframe technology, according to CI/Infocorp. The most popular system in federal agencies is IBM's 4300 series. Federal systems are thought to be older machines, but the research showed that 50% of Fortune 1,000 firms installed mainframes in 1987 or later, while agencies installed them in 1986 or later.

**IBM** System/36 users interested in moving to Unix have another option through a new conversion service offered by **Computer Resources and Technology, Inc.** in Waukesha, Wis. The firm's Convert/C service will move System/36 RPGII code to the C language, allowing the old programs to take full advantage of Unix.

The service is individually priced and depends on the number of libraries to be converted.

# Tandem users inch toward SQL

ANALYSIS

BY JEAN S. BOZMAN
CW STAFF

Tandem Computers, Inc.'s Nonstop SQL relational database gains high marks from users for its ability to shorten application development times. But the relational database management system has been slow to displace Tandem's older Enscribe database, which has been handling high-speed transactions processing since the late 1970s.

Introduced as a 1987 replacement for the aging hierarchical Enscribe database, Nonstop SQL accounts for the vast majority of databases shipped with new Tandem systems, including VLXs and Cyclones. However, the percentage of the overall Tandem base is markedly lower, reportedly because Enscribe is still faster than its relational successor.

"Probably 30% of current Tandem users are using Nonstop SQL," said Anthony Percy, vice president of research at the software management strategies service of Gartner Group, Inc. in Stamford, Conn. "For the new processors, it's probably 70% or more."

Percy estimated that it may take five years or more before Nonstop SQL becomes the dominant Tandem database.

Interviews with some Tandem users show that they have been slow to give up applications based on Enscribe, which has only some relational elements. Particularly slow to be changed over are those at the heart of a time-dependent business. The Chicago Board of Trade, for example, has deployed Nonstop SQL for many decision-support and query applications but is holding on to Enscribe applications that support the board's trading floor.

One reason for user loyalty to Enscribe may be that Nonstop SQL, while fast, does not quite match Enscribe's flat-out speeds. "Tandem is adamant about saying that Nonstop SQL is as fast as Enscribe," said Roy Schulte, a software analyst at Gartner Group. "There are applications for which that is true, but not for all applications."

Still, Nonstop SQL appears to be overdue for a major revision.

The most recent update was Release 2.0, which was introduced in 1989. Stopping short of promising another release, Roberta Henderson, vice president of on-line transaction processing software development at Tandem, promised more third-party tools for Nonstop SQL.

*Continued on page 46*

### Making a dent

***Tandem Computers, Inc's. SQL is gaining in popularity within the company's newer lines, such as the VLX and Cyclone, but it has a way to go in the older, more common machines***

U.S. installed base, 1990

| | |
|---|---|
| Nonstop I | 497 |
| Nonstop II | 2,574 |
| Nonstop EXT | 1,723 |
| Nonstop CLX | 2,413 |
| Nonstop TXP | 3,013 |
| Nonstop VLX | 869 |
| Nonstop Cyclone | 16 |

Source: Computer Intelligence/Infocorp

# Holding on to 50 series, Prime users eye future

BY SALLY CUSACK
CW STAFF

NATICK, Mass. — Users of Prime Computer, Inc. 50 series systems were not overly concerned about Prime's prediction last month that its proprietary line will be phased out. Most of the midrange users have already cast a roving eye at open systems in search of alternatives to the proprietary platform.

In response to Prime's statement that the 50 series has "about five years of life in it," Chris Arndt-Kohlway, a computer scientist at Aerojet in Sacramento, Calif., said he would be surprised if it had that long a life span.

"We were planning on replacing the 50 series after the first of the year with one of Prime's EXL Unix-based systems," Arndt-Kohlway said.

The EXL is based on Mips Computer Systems, Inc. technology, and although Arndt-Kohlway said he has some concerns about Prime providing software support, hardware support should not be an issue.

Aerojet also uses PI Plus, Prime's Unix version of its Pick-like database management system. Both EXL and PI Plus are part of Prime's dual-rail strategy to migrate users painlessly from proprietary to open systems.

Dan Olsen, president of the National Prime Users' Group, said the vendor has positioned itself well to meet the future needs of its customers. He said the 50 series can be upgraded to a Unix system by switching some internal components.

### Few adventurers

While most users have been evaluating open system strategies, few have gone ahead and charged onto new platforms.

George Bailey, vice president and director of MIS at Whitehall Co. in Norwell, Mass., has been a Prime user since 1980 and is using a Prime 9955 to process all applications. Whitehall has the computer tightly integrated with a real-time, in-house-developed warehousing system.

Because of this, Bailey said, migration will not be easy. "We are looking at a variety of alternatives, including Unix and OS/2, which we will try to phase in with the Prime," he said.

Another Prime user, Gary Bebout, director of data processing at Colonial Freight Systems in Knoxville, Tenn., said the firm had been "looking at something running in a Unix environment" but was not upgrading in the near future.

The company uses a Prime 2950 for all accounting applications. It will be looking at a variety of Unix-based systems, including the EXL, Bebout said.

Prime's success in moving customers over to the EXL box will depend on how gracefully they exit the 50 series systems, said George Weiss, vice president of midrange computing strategies at Gartner Group, Inc. in Stamford, Conn.

Weiss said Prime will have to maintain customer loyalty while building strategic-based environments for the Unix boxes.

"There is a market opportunity that still exists, but [Prime] will have to move quickly and be bold," he said.


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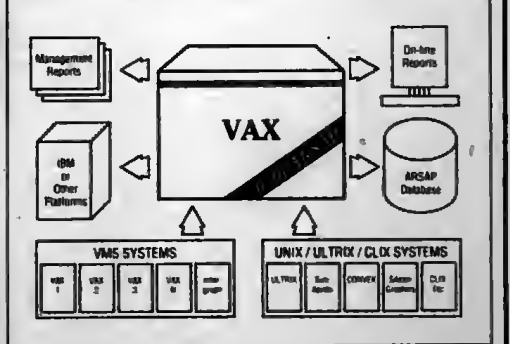

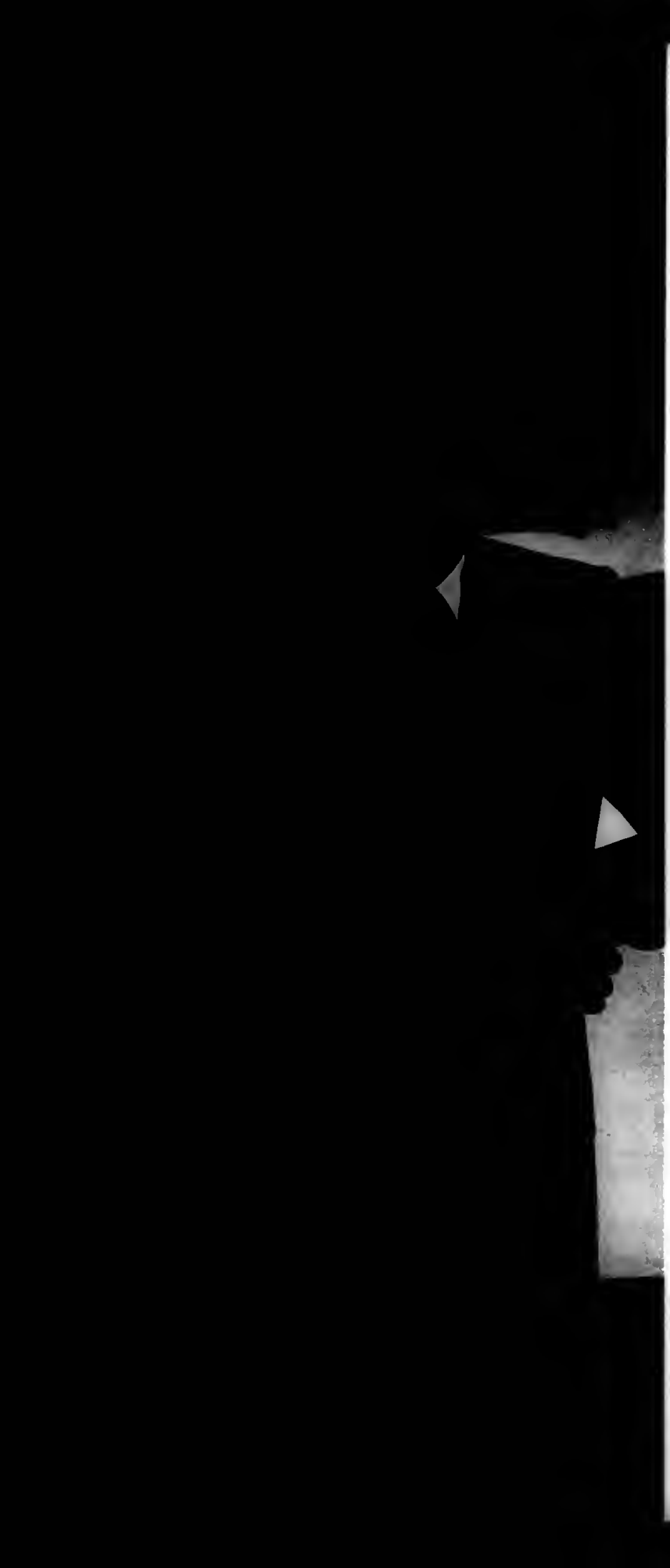

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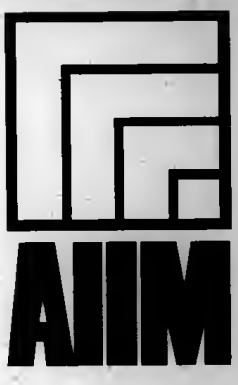


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# AIIM White Paper

## *INTRODUCTION*

*Usually, when some of the largest industries in the world experience the need to conduct business in a more efficient manner, computer technology is not lagging far behind with an answer. So it should come as no surprise that when paper-intensive industries such as services, manufacturing and government cried out for paper relief, a high technology solution presented itself in the form of imaging.*

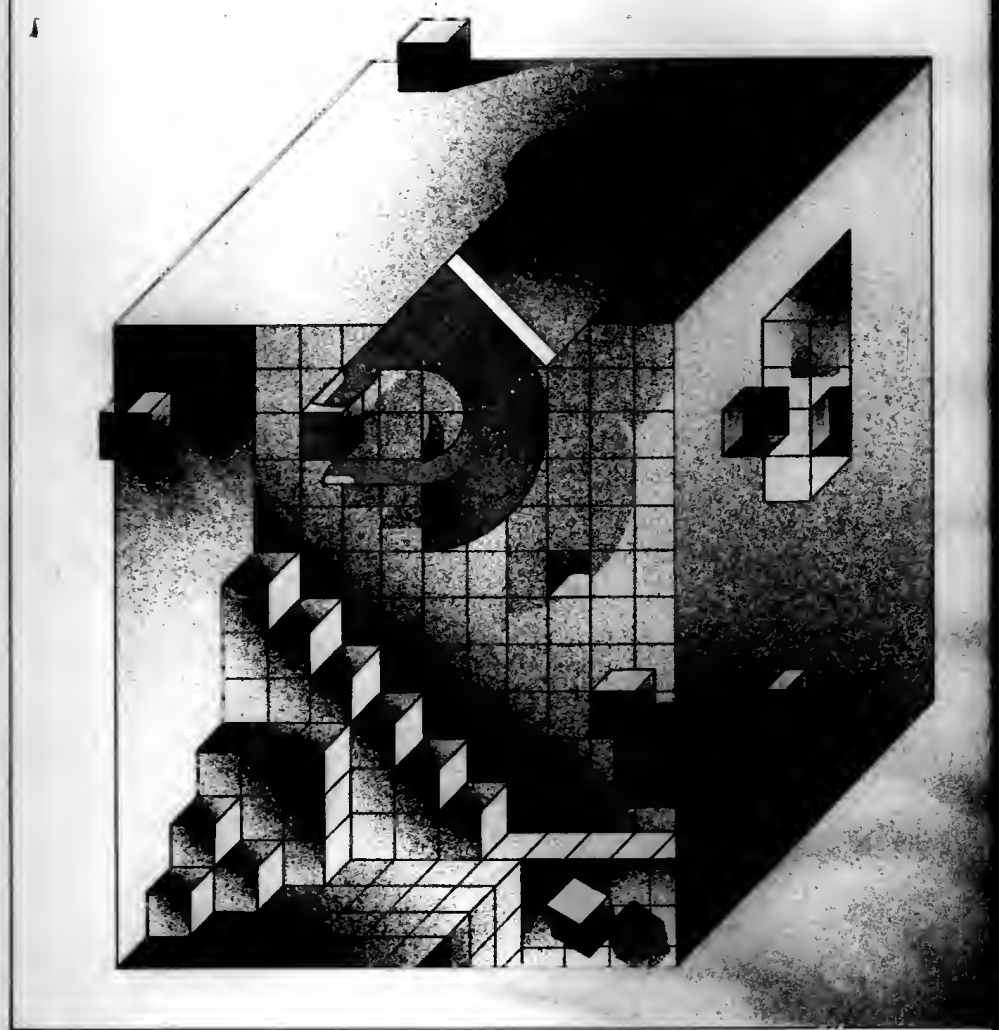
*Actually, imaging in its earliest micrographic incarnations of microfilm and microfiche has been around — and has served the business community well — for more than 50 years. It is during the past decade, though, that the modern electronic image management (EIM) systems with their amazing ability to store, retrieve and illustrate data have come to the fore.*

*The benefits of EIM can be found in both hard dollar savings and increased productivity, the two magic ingredients bottom-line-oriented top management demands as justification for new technology outlays. It is not unusual for users to experience time savings and productivity gains of up to 75%. Those numbers can assuage the most fiscally conservative skeptics.*

*Despite the many bright prospects for EIM technology, however, users must avoid the pitfalls of implementing it without proper forethought. Although there is a substantial body of actual and de facto standards that applies to EIM systems, users who implement systems willy-nilly may find themselves isolated on incompatible technology islands.*

*For those who eschew rash action in favor of a timely, well-considered approach, the manifest advantages of EIM and imaging in general are waiting to be realized. Industries and companies willing to rethink and reshape the ways they do business will reap competitive benefits.*

AIIM White Paper



# THE INFORMATION AND IMAGE MANAGEMENT INDUSTRY

IT IS SAID THAT HUMANS WILL BUILD A FIRE FOR ONE OF TWO REASONS: EITHER BECAUSE THEY ARE COLD OR BECAUSE THEY HAVE A MATCH. TODAY THE INFORMATION TECHNOLOGY COMMUNITY IS ABLAZE WITH IMAGING BECAUSE SOMEBODY STRUCK THE MATCH OF WORLDWIDE COMPETITION. THIS COMPETITION DEMANDED NOT JUST INCREMENTAL PROCESS IMPROVEMENTS, BUT A WHOLESALE RETHINKING OF THE WAY BUSINESS IS CONDUCTED. WHAT EMERGED WAS A CONFLUENCE OF TECHNOLOGIES THAT ENABLED ELECTRONIC IMAGE MANAGEMENT (EIM) TO FLARE UP FROM ITS WELL-ESTABLISHED BASE IN MICROGRAPHICS TO BECOME THE MOST DYNAMIC ELEMENT IN A $3.56 BILLION U.S. INDUSTRY. ■ FROM A USER POINT OF VIEW, IMAGING SIMPLY INVOLVES USING THE REPRESENTATION OF A DOCUMENT ON A SCREEN RATHER THAN THE PAPER DOCUMENT ITSELF. ASIDE FROM THE OBVIOUS BENEFIT OF ELIMINATING TEDIOUS PAPER SHUFFLING, IMAGING SAVES

space — original documents may be stored off site or disposed of altogether — and time.

It has been estimated that a typical worker in an accounts receivable operation takes 12 minutes to process a document. Of those 12 minutes, nine are spent searching for, retrieving and refiling the document, while only three are spent actually processing it. By eliminating those nine minutes, imaging drastically reduces the time required for nonproductive operations — in this case by 75%. It also eliminates the 3% misfile factor that paper-intensive operations must contend with.

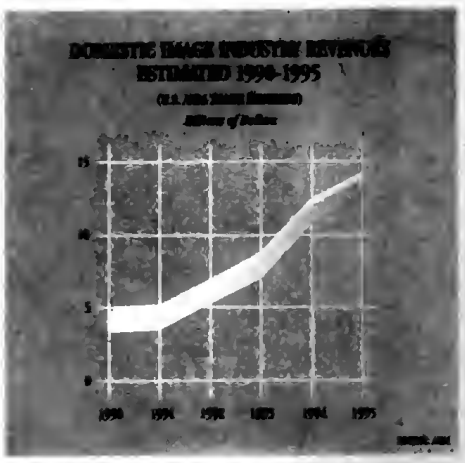
Image-based storage and retrieval in its many forms is nothing new. Governments, manufacturers, health care providers and financial service organizations have been using micrographics as a way of storing and retrieving information for decades. Nor is the marriage of the computer and micrographics unusual. Computers have been outputting to microfilm and microfiche nearly as long as they have to paper, and the use of computers to retrieve micrographic images has been around for years. Moreover, micrographic technologies have seen steady if unspectacular improvements as long as they have been in use. That dates back at least to 1945, when the National Microfilm Association — today's Association for Information and Image Management — was founded.

Micrographics products fall into three categories:

- Reel-based microfilm and film-based microfiche (also known as standalone micrographics)
- Computer output to microfilm
- Computer-assisted retrieval.

## EIM BREAKTHROUGH

What gave the industry its biggest boost, though, was the emergence of EIM, a set of technologies that greatly extends the utility of images beyond such traditional uses as storage and retrieval and micropublishing. Electronic imaging allows such technological advances as instantaneous communication of document-based information and multiple, simultaneous viewing of documents. Armed with these capabilities, operations analysts are revamping work flows in ways that are unthinkable with paper.




**AIIM predicts the U.S. image industry will experience solid growth over the first half of the 1990s.**

Inevitably, discussions of electronic imaging technologies revolve around storage media. This is because the problem with storing images in computer-readable form is the enormous amount of disk space they require. Unlike ASCII text, digitized documents consume massive amounts of storage even when efficiently compressed.

In the case of most EIM systems — with the exception of some magnetic-based disk versions — the optical disk is the most essential element. Without its economical, multi-gigahyte capacity it would be difficult to find a practical alternative.

By far the most common optical disk technology in use today for business-document imaging is the write-once, read-many (WORM) disk. This is an advantage for many applications, while others require one of the emerging rewritable optical disk technologies. For publishing, the most appropriate medium is the compact disk read-only memory (CD-ROM). CD-ROMs can be read, but cannot be written to with commonly used input devices. The process of making duplicates is very inexpensive, hence its attractiveness as a means of disseminating information to a wide audience.

Despite the critical role of optical disks, it is inaccurate to refer to EIM systems as "optical disk systems," both because there are other essential technologies involved, and because optical media may be used to store any digital information — such as data — in addition to images. These other elements include high-speed scanning systems, high-resolution displays, rapid and powerful compression techniques, telecommunications and laser printing. Nearly as crucial as the development of high-density storage media is the evolution of the microprocessor, whose vastly increased processing power is necessary to manipulate cumbersome document images.

As mentioned, optical disks are not the only disk medium used for electronic imaging. Some systems, particularly those in which rapid and frequent retrieval is necessary — but in which images are retained in the system only briefly — employ magnetic hard disks. In the future, moreover, some experts in technology development predict that optical disks will be supplanted by holographic crystals or some other arcane storage technology.

The fact remains, however, that most of today's electronic imaging relies on optical disks. Optical disks are generally stored in an optical jukebox, a device that works like a musical jukebox. When an image is requested, the jukebox selects the correct optical disk, robotically mounts it into a disk drive, the disk is read using a laser, and the appropriate image is displayed on a CRT in seconds.

## MARKET PENETRATION TRENDS

That imaging in its many forms is increasingly penetrating the workplace can be seen in its pattern of uses. Of the $3.6 billion in U.S. sales of imaging products and services in 1990, fully 25% went to transaction processing, such as credit card applications, while a mere 13% was used for archival or inactive storage. This reflects the growing use of EIM and the

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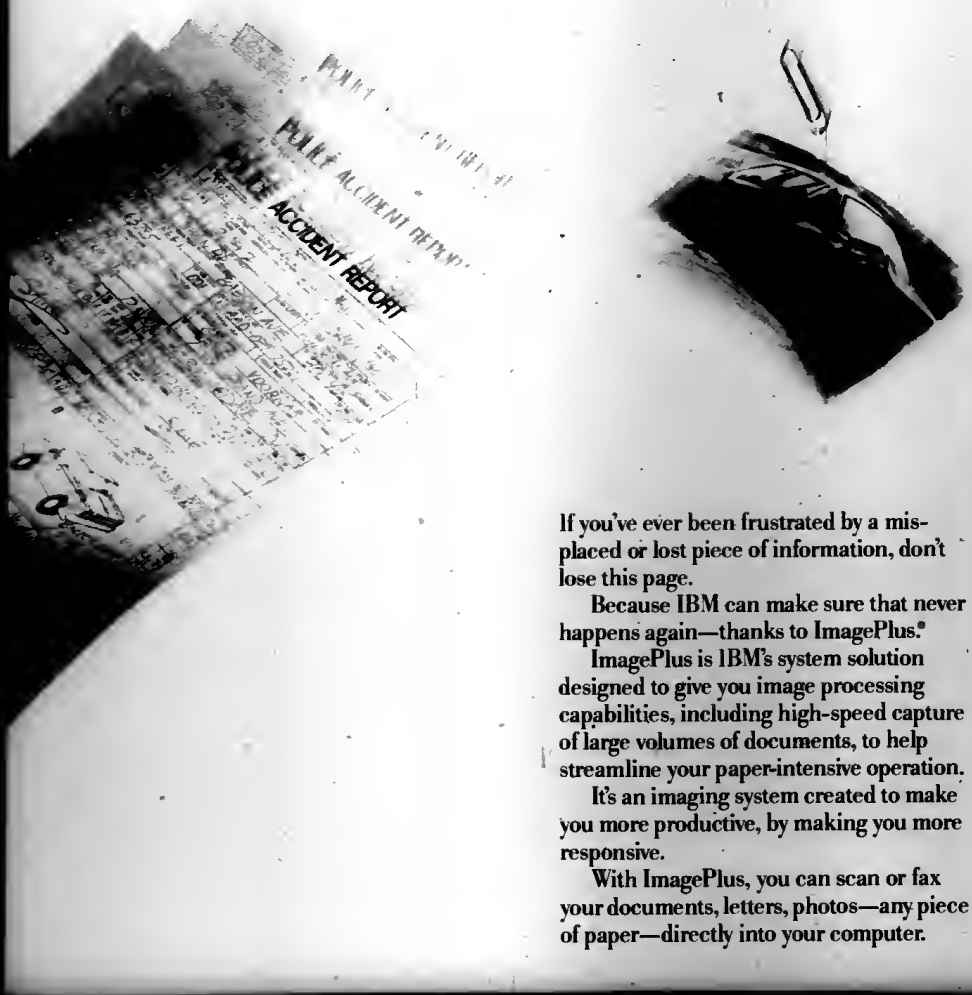


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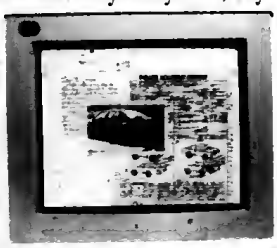

any department—from your accounting people to your customer service reps—can retrieve it, file it, view it in full color, and reproduce it. Instantly.

One of the many other conveniences: An image of a color photograph can be captured, stored and retrieved from the same folder that contains an image of a handwritten letter and other related documents.

Today, hundreds of ImagePlus systems are installed and improving productivity and customer service in banks, insurance companies, government agencies, hospitals, manufacturers, retailers and transportation companies around the world.

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low-growth role of micrographics. In between these active and inactive poles is a gray area, the active storage and retrieval of documents, which accounted for 20% percent of 1990 revenues. It is testimony to the longevity of micrographic technology that computer output microfilm still comprises 18% of the imaging pie. Remaining categories include indirect sales through resellers (15%), oversized drawing management — largely drafting drawings (6%), "other" (2%) and electronic publishing (1%).

Because EIM finds its greatest acceptance in paper-intensive operations, it is no surprise that banking, insurance and government have been its most ardent devotees. That pattern is changing, however. Over the past five years, there has been a steady decline in the portion of imaging sales that goes to financial services and government, not because use is declining in those sectors, but because other industries are finding hitherto undiscovered applications.

For instance, manufacturers are discovering a number of areas in which imaging technologies can boost productivity, one being systems documentation. Consider this: according to one vendor, the paper documentation for a submarine weighs more than the submarine itself!

## A ROBUST INDUSTRY

In an era that finds so many firms reeling from the effects of recession, particularly in the high tech arena, imaging is showing surprising resilience. This and many other facts describing the overall EIM and micrographics industry are documented in the Association for Information and Image Management's (AIIM's) annual study.

Despite recession and war, the outlook continues to be decidedly positive. The compound annual growth rate for the entire U.S. industry over the next five years is projected to be 28%, with no segment declining or even remaining flat.

EIM drew nearly even with micrographics in revenues in 1990, generating $1,307,000,000 compared with micrographics $1,422,000,000. All indications are that 1991 is the year in which EIM sales will exceed those of micrographics. In addition to the revenues from EIM and micrographics, other industry revenues came from services ($761 million) and software ($70 million). Revenues reported by AIIM are based on the survey results from the association's 560 member companies, which comprise nearly the entire U.S. industry.

End users reported bullish spending for 1990. So bullish, in fact, that their reported acquisition of imaging products and services slightly exceeded revenues claimed by imaging vendors and service providers for that same period. In all, 861 end users participated in the survey. As a group they averaged nearly $850,000 in annual expenditures for imaging products and services. Their responses to both quantitative and qualitative questions tended to fall into distinct patterns, depending on which broad sector of the economy — manufacturing, government, or services — they belonged to.

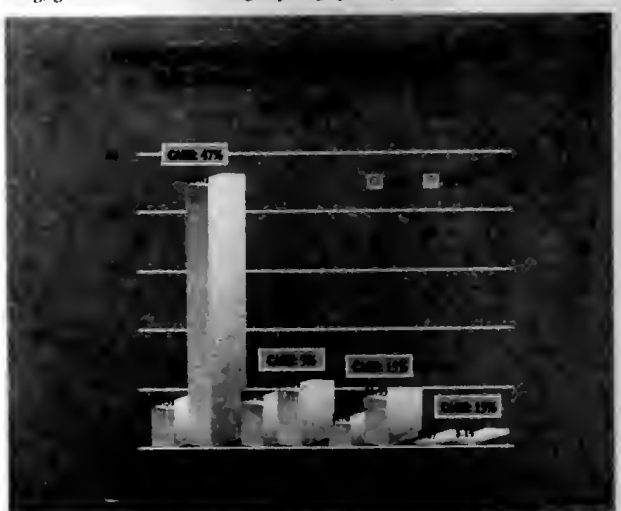
All users were in agreement on four main points:

- Cost is a very important consideration in making imaging purchase decisions.
- A technology needs to prove itself before end users will implement it.
- Micrographics will remain a viable imaging technology over the next decade.
- End users need to be better educated on the range of imaging alternatives.

As would be expected, the manufacturing, government and services groups rated the various EIM benefits differently. Service industries reported that they were principally interested in imaging because of its potential to improve customer service. Manufacturers were chiefly interested in improving access time. Government agencies were looking for a way to reduce the constantly-expanding need for physical storage space.

The other factor that correlates closely to the use of imaging products and services is the extent to which organizations use paper. Not surprisingly, the more they use, the greater their need for imaging. The service segment, consisting of insurance, health care, banking, financial services and miscellaneous services, such as advertising and publishing, is by far the imaging world's biggest spender.

Manufacturing firms, while showing the lowest 1990 average expenditures for imaging, also report being the least satisfied with the imaging products they are currently using. As a result of this need for enhanced products, manufacturers plan to increase their imaging expenditures by 51% from 1990 to 1991. The spending won't be spread evenly, however. Manufacturers will double the dollars they allocate to EIM, while their micrographics spending will remain flat. This




**Electronic image management systems revenues have pulled even with those of micrographic systems and are projected to far exceed them by 1995.**

# A Not So Subtle Message From End Users To MIS. HELP!

Imaging solutions are no secret any more. The word is out. And companies from Toronto to Tokyo are reaping the benefits of imaging – in areas ranging from records management to workflow automation.

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Your end users will thank you for it. And you just may get Meredith in Accounts Payable to spring for a lunch.

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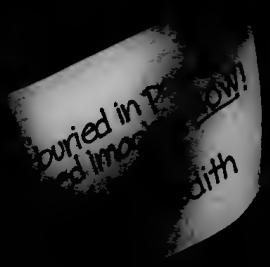

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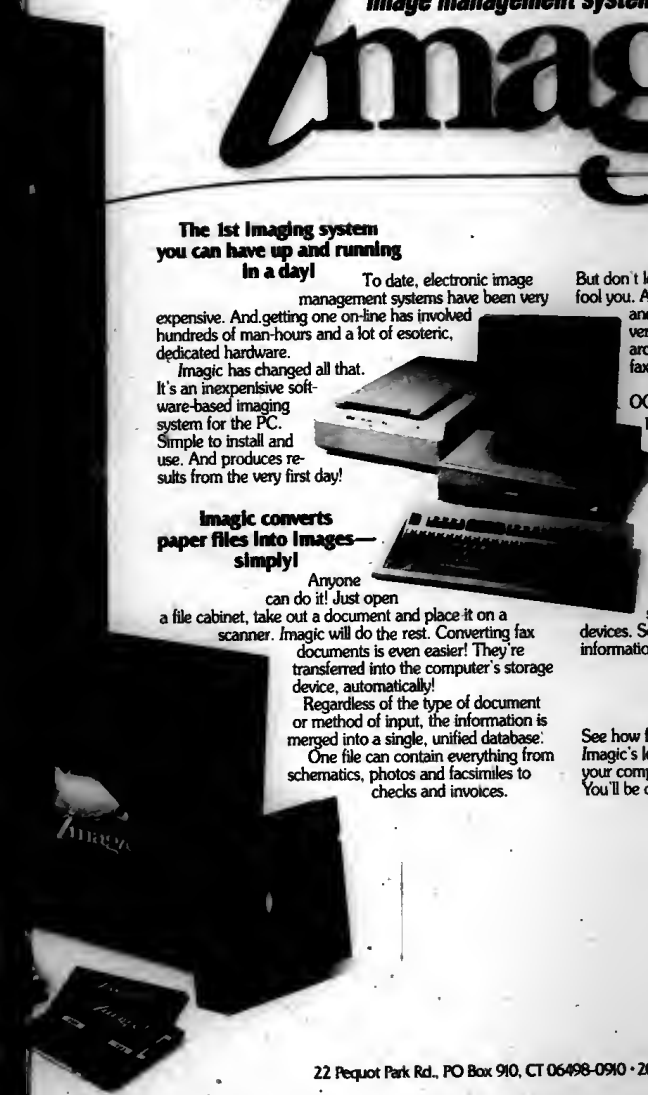

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may be a signal that the improving price-performance of EIM is now attractive to even the relatively less paper-intensive manufacturing sector.

Government is the only sector in which imaging expenditures are not expected to grow. Federal government organizations report that their spending for imaging products will decrease by 8% during the 1990-1991 time period. Increasing pressure to reduce government spending on all levels may be the reason.

## THE AIIM SHOW: AN ANNUAL BAROMETER

The high point on the annual image industry calendar is the AIIM Show and Conference. Far and away the largest gathering of imaging systems and professionals in the world, the show and conference has come to be regarded as a barometer for the entire industry. Furthermore, many exhibitors time their new product announcements to coincide with the event, making it a good indicator of the pace and direction of R&D in the industry.

Despite the uncertain economy and war in the Persian Gulf, attendance at the product exhibition grew from last year's 25,600 to 33,500. At the concurrent conference, attendance rose from 2,469 to 2,800. An informal survey of exhibitors suggests, moreover, that these were high-ranking people, and that they came not out of curiosity, but to buy. "These people are well educated," said one harried but happy exhibitor. "There are not many tire kickers."

The breakdown of exhibitors shows that 183 were primarily EIM vendors, 65 were micrographics-based and 23 were both.

As happened at previous shows, great emphasis was placed upon compatibility — integrating imaging applications with other applications, especially those in the Microsoft Windows 3.0 environment. Minolta Corp. introduced the MINOLTA 3000; Wang announced Windows enhancements to the Wang Integrated Image Systems line; and LaserData, Inc., put its LaserView Windows on display. Wang also announced support for another Windows-based system, the Apple Macintosh. Reduced start-up costs and the gradual development of a commodity market are allowing a wealth of smaller firms to enter the market with "bottom-up" desktop products, often based on Windows 3.0.

Hybrid systems — so-called electronic micrographics products that use film as a storage device but scan the film to retrieve the image — were also in evidence at the show. Their announcements were largely refinements and extensions to product lines introduced at past shows.

"Incremental advances" was the catch phrase among industry pundits passing in the aisles. The new products and companies at this year's show represented the logical extension of trends evident in past years. The influx of the traditional computer companies — a trend begun with the presence of Wang Laboratories and completed with the addition of IBM, Digital Equipment Corp. and Unisys Corp. — continued this year with an exhibition from Apple Computer, Inc.

There was also representation from database companies. For instance, Informix explained the difference between simply pointing to images with databases and storing images within databases.

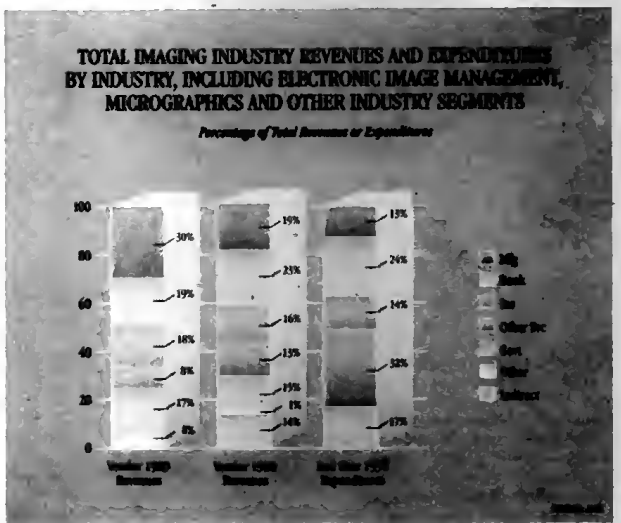
## DEPLOYMENT STRATEGIES

As imaging systems become increasingly popular, users are asking themselves how far they want to go with the technology. Should systems be enterprise-wide or departmentally based? Should they be used in workflow environments that automate all steps in business operations, or should they be limited to filing and retrieving documents?

If few users are involved, if the number of functions required of the system is limited, or if a pilot project can be expanded, departmental imaging systems are appropriate. Such systems may be based upon standalone microcomputers. Or, as is increasingly the case, several microcomputers may be linked together on a local area network (LAN). In a LAN-based system, one or two computers act as the host and are linked via Ethernet or Token Ring, for example, to image-capable workstations. LAN-based systems must also incorporate operating software for the network.

Networked systems are capable of more advanced applications than their standalone counterparts. Standalone systems are little more than electronic file cabinets; networked systems allow users to route and track correspondence. Even more importantly, they facilitate the most sophisticated use of image systems, workflow applications.

In the workflow environment, man-




**The most ardent image system users continue to be in the financial, manufacturing, insurance and government sectors.**

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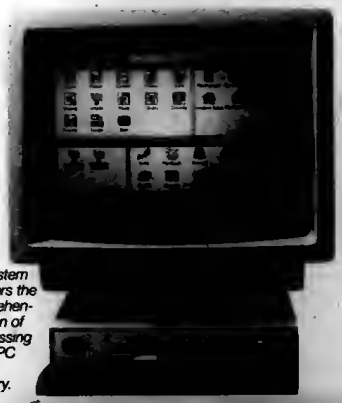

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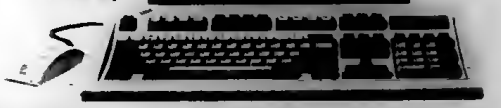

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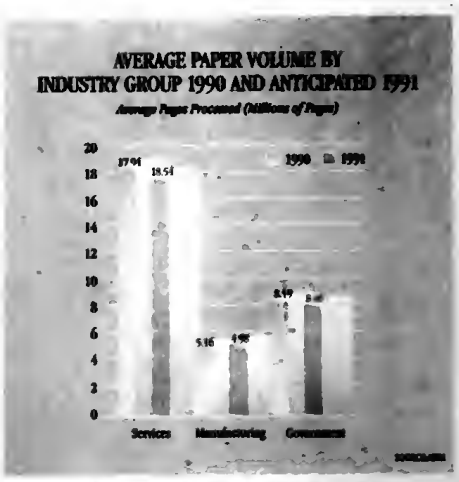
agers may distribute work among staff and easily access correspondence and similar data. The organization immerses itself in an electronic environment that consolidates and automates all steps in the business process. For instance, in the case of a mortgage loan application, an EIM system would facilitate the title search, locate any appraisal, locate a photo of the house in question, etc., all tasks that may have formerly been done by many different people. Although the workflow concept is optimized in large-scale enterprise-wide applications, small systems can also provide some workflow function. This is true in department-specific applications such as accounts payable.

Before implementing departmental imaging systems — which can become isolated islands of technology if they are not planned properly — users should consider future expansion. If other departments or the entire enterprise automates along slightly different technology lines using different platforms or communication protocols, the organization may end up with a hodgepodge of dissonant departmental and standalone systems.




The services industry, which consumes more paper than manufacturing and government, also is a much heavier electronic image management user.

## OPEN ARCHITECTURE AND STANDARDS

Expandability, compatibility and communication all fall under the rubric "Open Architecture." Open architecture is the most important concept to impact electronic imaging in the last three years. Unfortunately, it is the subject of widespread misinterpretation and misinformation.

When vendors speak of open systems, they often address them in terms of their own company's proprietary product environment. In a true open-architecture software environment, imaging software runs indiscriminately on multivendor hardware. When this is the case, users save money because they can purchase the least expensive hardware in a compatible and competitive marketplace. A truly open architecture also embraces systems integration. This allows systems integrators or third-party vendors to seamlessly add new platforms or peripherals to existing systems. This also requires thorough system documentation.

If an EIM system can be easily integrated with other application software, it is said to have an open application interface. Such a system may interface either with other off-the-shelf packages or with code written by users. Open application interfaces allow users to modify systems to match their own unique requirements.

At a time when many corporations rely on national and global, as well as local communication, telecommunications is a critical factor in successful EIM and micrographics systems. Electronic micrographics systems that store digital images on microfilm, like EIM systems, can be integrated into today's networks.

The importance of standards in electronic image management is hotly contested. For instance, many observers feel that the relative lack of standards pertaining to formatting optical disks has significantly inhibited the broad acceptance of EIM. Others believe the standards issue is a red herring because there are standards relating to formatting as well as all aspects of imaging.

Standards governing the compression and decompression of electronic images have received much attention. Some experts say that existing CCITT Group 3 and 4 are adequate, but not everyone agrees. For instance, different vendors handle certain details of the CCITT specification differently, so that two systems supporting G3 compression may still be unable to read each other's image data. An AIIM committee is currently developing a standard implementation of the algorithm for document imaging applications.

The trend among vendors to make their imaging software and hardware offerings more 'open' is nearly universal. No one yet offers systems that are truly open, but users are demanding them.

## CASE STUDY: BURROUGHS WELLCOME CO.

Each day, the Clinical Data Processing department at pharmaceutical company Burroughs Wellcome Co. receives approximately 2,500 pages of clinical trial data submitted by physicians and others. Quick processing is critical; the company must be able to respond immediately if test results indicate a trend of adverse reactions to a drug compound. In addition, incomplete or incorrect documentation of trial results may delay FDA approval, which could cost the company hundreds of thousands of dollars.

Burroughs Wellcome needed to ensure that any extension to its information processing environment would make appropriate use of its existing systems, which included 1,000 PS/2 workstations and more than 2,000 other PCs, Macintoshes and laptops. The company also wanted to employ an Ethernet LAN for high-volume image traffic and an existing IBM Token Ring network to provide image services to end users.

A FileNet Corp. system closely integrated with Burroughs Wellcome's existing mainframe and PC workstation platforms was installed in February 1990. A complex workflow process was automated using FileNet's WorkFlo Business System, an integrated package of document image processing software modules and development tools.

At the start of this workflow process,

each page of the incoming case report form is indexed and verified. Rigorous controls ensure that no pages are ever lost, misfiled or out-of-file. The forms are automatically routed to professional editors who review the documents for thoroughness and completeness. Medically trained staff, called monitors, also may be consulted to validate data. Any subsequent adjustments must be filed using special change authorization forms, which are printed off the imaging system and mailed to physicians as needed.

The system also keeps track of when change forms are sent, enabling Burroughs Wellcome to maintain an accurate schedule of update requests. Once the change authorizations arrive, the system electronically "paper clips" the forms to the original pages, providing an audit trail of all changes made to documentation.

For Burroughs Wellcome, which prides itself on high quality, an integrated image solution is helping to improve processing efficiency, ensure information accuracy, and increase professional productivity. By using the company's existing information systems network, the imaging system provides a way for Burroughs Wellcome to streamline and effectively manage the most critical portion of its product documentation. And for a pharmaceutical company, that is a matter of life and death.

**One-billion-dollar companies are expected to average just under $3,000,000 each on electronic image management systems expenditures in 1991.**

## CASE STUDY: GOSHEN RUBBER COMPANIES

Goshen Rubber Companies, a privately held firm based in Goshen, Indiana, that manufactures seals and gaskets that it markets primarily to "tier two" auto industry suppliers, has been putting document imaging technology to work in the manufacturing environment for more than a year. Every month, the organization uses imaging to track and process roughly 600 price quotes averaging five or six pages each.

Goshen Rubber has been a Wang Laboratories Inc. equipment user for over 10 years, and much of its Wang Integrated Image Systems (WIIS) product has been installed on existing hardware, including the company's Wang VS 1000 Model 50 mid-range computer. With the implementation of imaging, Goshen has added a two-drive optical jukebox and 33 image-capable terminals to its complement of hardware.

"What imaging brings to the table," explains Jim Holsopple, Goshen's manager of data processing, "is the ability to pass quickly from workstation to workstation documents that used to be passed by hand."

According to Holsopple, the imaging application proved itself in three primary ways. First, the average time to process a quote has been cut nearly in half from 15 to eight days. Second, information no longer gets misplaced. Third, accountability has improved. Now, having better control of the location and status of any particular quote, Goshen can, within minutes, tell a potential customer the exact status of that quote. "If the customer calls and says, 'My requirement has changed, I need that quote by tomorrow,' then we know we can say, 'This quote has become hot. We have to move it.'"

## SYMBIOTIC VENDOR ALLIANCES

In the imaging world, vendors who would otherwise harmfully compete with each other realize comparative advantages by handing together in strategic alliances. These alliances are made possible by the volume and variety of technologies critical to imaging, and the resultant need to customize them for specific requirements. Almost nobody is trying to go it alone. Smart vendors are playing to their strengths and filling in the gaps by aligning themselves with companies that have complementary expertise.

IBM is an excellent example of this phenomenon. It is aligned with a raft of small software firms that tailor IBM imaging systems to the specific needs of vertical markets. Such tailoring requires extensive knowledge of the particular markets. This knowledge is much more easily acquired by making friends with people who already possess it than by amassing it from the ground up. Digital Equipment, Unisys and Wang have made such alliances. Even when it comes to assembling hardware, both large and small vendors play the role of system integrators, purchasing terminals, scanners, drives, jukeboxes and printers through various OEMs.

Eastman Kodak and Anacomp hammered out a high-profile micrographics alliance calling for the two firms to cooperate in the development and marketing of computer output microfilm.

## SUMMARY

This is clearly an industry on the rise. Like others, its future will be determined largely by user acceptance. If users are willing to embrace imaging technology — which means dramatically changing the way they do business — the imaging industry will be robust for many years to come. Given the productivity gains and financial savings available through imaging systems, it seems only a matter of time before they become a competitive necessity.

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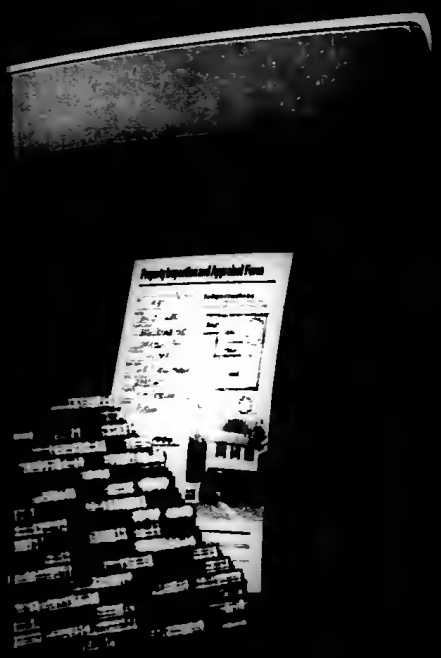

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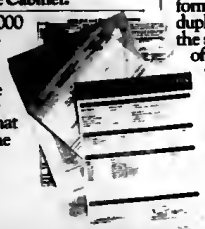

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# Secondary site crucial for Principal

*Firm sets up two data centers with disaster recovery ability to protect mission-critical applications*

ON SITE

BY ROSEMARY HAMILTON
CW STAFF

DES MOINES, Iowa — The Principal Financial Group is completing a restructuring of its data center operations that allowed it to set up equipment in a campus-like environment and build in its own disaster recovery function.

The heart of this new structure is the IBM System/390 generation, according to Robert Delaney, a Principal Financial vice president in charge of information services.

The company had long relied on one data center and until the late 1980s, used older 3080-class IBM mainframes. Three years ago, Delaney decided to lease a second data center that was located about a mile from its main center here. The idea was to lessen the reliance on an outside disaster recovery service provider by having a backup data center that could function as a hot site if the main center was knocked out.

An in-house disaster recovery function is essential to this insurance company because many of its applications are mission-critical, Delaney said. Through a combination of personal computers and terminals, the firm now supports approximately 12,000 users in its three main insurance groups, he added.

When IBM introduced the System/390 last year, the company was able to install some technology to make this backup data center a reality, Delaney said.

The most critical piece is Escon, IBM's fiber-optic based channel architecture. It allows users to set up peripherals up to five miles away from a CPU. Without Escon, users are limited to spacing equipment only a few hundred feet apart.

**Principal Financial's Delaney** *makes backup data center a reality*

Secondly, the new generation included high-end processors that would enable the company to set up a large single-image computing environment, which it needs to support corporate databases as well as many other large applications.

"No other vendor had all the things [we needed] put together," Delaney said. "Hitachi had the fiber, but they don't have the large-enough computers."

Delaney had set up the tape drive and printers in a separate facility near the first center and is now upgrading the tape drives to the new channel architecture.

Last year, he moved about half the firm's disk drives — about 150G bytes worth — to the second data center. The disk drives are using Escon as well. IBM has not yet provided native Escon support for its high-end drives, so they currently require a converter if the fiber channels are used. While the converter cancels out the improvements in data-transfer rates that also come with Escon, it does not affect the distance improvements.

Delaney installed an IBM Enterprise System/9000 Model 720 and, more recently, a top-of-the-line Model 900 at the second center. Earlier this year, Principal Financial participated in the early support program for the Model 900-class, which will be generally available this month.

The first center has the remaining disk drives and two 3090 Model 600-class mainframes. The goal is to eventually upgrade these systems to a Model 900 as well.

Currently, the first center handles all mission-critical applications while the second center handles the less essential processing, such as development, end-user computing and the production of special reports.

Delaney maintains copies of the mission-critical files at both locations. Should a disaster occur, he can switch the second data center over to main-center status.

Although the company has its own backup center now, it has not decided how it will proceed with Comdisco, Inc., which has been the company's disaster recovery service provider.

"I haven't yet made a decision to phase them out," Delaney said. "It would still allow me to recover my database while I reestablish my own."

# Visa creates supercenters to track card transactions

BY JEAN S. BOZMAN
CW STAFF

Visa International, Inc. is preparing to run its global worldwide network from just two "supercenters" — one in McLean, Va., and the other in Basingstoke, England. Visa is relying on transoceanic fiber-optic cables to keep transactions from its 257 million cardholders worldwide flowing smoothly.

Sometime in 1992, Visa's McLean data center will open, taking over for an older McLean data processing location — and taking on an increasing work load from Visa's San Mateo, Calif., data center.

By March 1993, a similar supercenter in Basingstoke will come on-line, replacing an older data center in London. A third computer facility in Japan will continue to operate as a regional processing center.

"The advent of high-speed fiber-optic cable [on the sea floor] has allowed us to change our architecture," said Roger Peirce, the executive vice president of delivery systems at the company. "Instead of having a pair of data centers in the U.S. and another pair in England, we're going to have a pair of centers in two countries and coming up with a more efficient process."

The McLean data center will grow by annexation. Originally, its computer room had a raised-floor area of 15,000 sq ft. When complete, the supercenter will have four times that amount, or 60,000 sq ft of space, according to the company.

McLean will end up with four IBM 3090-class mainframes — double the current number — and will have nearly double the amount of disk drive units, boosting the number from 80 to 150. The new Basingstoke center will have equivalent hardware and floor space, Visa said.

The San Mateo center, which will host both development and production applications, will continue to have four IBM 3090-class mainframes and one Amdahl Corp. mainframe, along with 170 disk drive units, in a 30,000-sq-ft area.

Basingstoke will be capable of handling 2,000 trans/sec. by 1992, Visa said — as will the McLean site. By the end of the 1990s, Visa may have two more such supercenters in place, information systems planners said, most likely including one in Japan. Each supercenter would be able to run the global network by itself if necessary.

In time, Peirce said, Visa's San Mateo center, which was one of Visa's primary transaction-processing points, will become a software development facility and a laboratory for new networking capabilities.

But the California site will remain a vital part of the Visa network. "We expect to continue to hire aggressively," Peirce said, citing California as a good place to recruit programmers.

NEW DEALS

## Qantas uses Stratus to link systems

**Qantas Information Technology Ltd.** in Sydney, Australia, has chosen a Stratus Computer, Inc. XA 2000 Model 210 fault-tolerant system to link its Qantam Computer Reservation System with other major on-line reservation systems. The $795,000 deal calls for the crash-proof Stratus machine to run software developed by Qantek, the information technology arm of Qantas Airways, the oldest airline in the English-speaking world.

The new system will allow any ticket agent worldwide to reserve seats on Qantas Airways. The reservation system, which resides on an Amdahl Corp. mainframe, will be linked to the Stratus system via Synchronous Link Control, an airline industry communications protocol.

**Chemical Banking Corp.** in New York recently signed a contract with Digital Equipment Corp. to launch a new global custody system. The Global Plus system, developed by Premier Systems, Inc. in Wayne, Pa., will run on a DEC VAX platform and assist the bank with its worldwide asset management functions.

**The NASA Center for Computational Sciences** recently installed a Convex Computer Corp. C220 supercomputer for distributed scientific visualization. The center supports about 1,500 users in a spectrum of scientific fields. They will be using Convex AVS, the company's implementation of the standard Application Visualization System.

# SCO scores, gains X/Open approval

BY JEAN S. BOZMAN
CW STAFF

SANTA CRUZ, Calif. — The Santa Cruz Operation (SCO) tried to score points with corporate users at its developer's conference here recently, announcing that it would become the first software firm to gain an official seal of approval from X/Open Consortium Ltd., the London-based nonprofit standards group, for its Unix-based software products.

There was a slight catch, however. X/Open Chief Technical Officer Mike Lambert explained that the X/Open label will be applied only to SCO's Unix server software running on several pretested hardware platforms, including the IBM Personal System/2.

"What we are branding is a combination of hardware and software [from different vendors]," Lambert said. "Previously, we only branded a bundled system from a single supplier."

**Greater acceptance**

Even so, SCO claimed the conferring of X/Open's XPG3 brand label on SCO's shrink-wrapped software could mean greater corporate acceptance of its Unix servers, which support Microsoft Corp. MS-DOS applications. SCO, whose revenue topped $110 million this year, cited corporate desire for shrink-wrapped applications.

The XPG3 label has already proved important in the European market, which accounts for nearly 40% of SCO revenue, said SCO Executive Vice President Doug Michels. The XPG3-standard label is also expected to appeal to U.S. federal agencies, he said.

Other conference announcements included the following:

- SCO outlined plans to ship Unix servers based on the Mips Computer Systems, Inc. R3000 and R4000 reduced instruction set computing chips sometime in1992 as part of the Advanced Computing Environment consortium.
- SCO said it would "soon" support Microsoft's DOS 5.0 operating system for personal computers connected to SCO's Unix servers. Microsoft is a longtime minority shareholder in the SCO Specification 2 (IBCS2) standard now available for customer inspection. Promoted as a way to launch shrink-wrapped Unix applications on Intel Corp.-based hardware, the IBCS2 standard is intended to be compatible with AT&T spin-off Unix System Laboratories, Inc.

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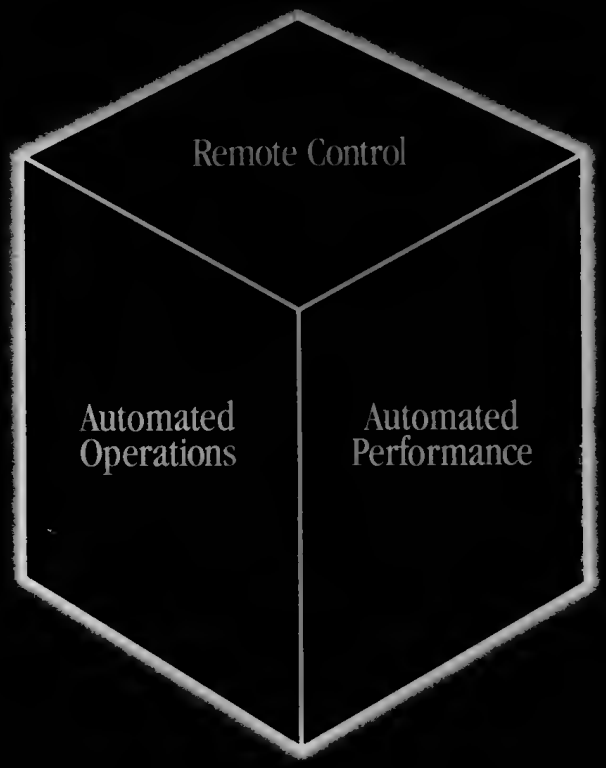


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## Tandem

FROM PAGE 21

Whatever difference there is between Enscribe and Nonstop SQL performance, however, is far less than the difference between IBM's hierarchical database, IMS, and IBM's relational database, DB2. IBM's IMS averages 1.6 to three times faster than DB2, Schulte noted. Tandem users said they have confidence that Nonstop SQL is fast enough to hold its own in transaction-processing applications. Mission-critical applications can be run with Nonstop SQL without any appreciable fall-off in performance, users said.

Copperweld Corp. in Pittsburgh is setting up new metal-processing plants in Birmingham, Ala., and Chicago — both of which will use Nonstop SQL databases to record orders and invoices for materials. Building systems is also faster, said Bill Morgan, vice president of information systems at Copperweld. He noted that it took only six weeks to put a purchasing application into production.

Federal Express Corp. is using Tandem VLX machines running Nonstop SQL to process packages through customs checkpoints worldwide. Even so, Fedex runs its primary package-sorting facility in Memphis on IBM's IMS, favoring the faster database over IBM's relational DB2, Fedex managers said. The firm has noticed little slowdown because of a 1988 conversion of its Enscribe customs application to Nonstop SQL.

"We might notice a slight difference in performance, but we haven't been worried enough to put paper and pencil to it," said Dana Barber, a manager of software development at Fedex's data center in Colorado Springs. "What's more important to us is flexibility in development. We don't have to change the overall application design to change data access," Barber said. "We just change the definitions in the data dictionary."

**Best features**

Speed of development and quick user access to stored data are Nonstop's best features, according to Glen Belden, vice president of IS at the Chicago Board of Trade. "We use the Tandem machines as giant file servers for our desktop machines," Belden said. "When we tried to do that with [Cullinet Software, Inc.'s] IDMS, it took days to get that information out of batch mode rather than minutes, as it does today."

The Chicago board's end users have desktop query software packages on Apple Computer, Inc. Macintoshes and IBM-compatible personal computers. These packages generate SQL code that can run against the Nonstop SQL database. A small group of support staff helps end users run the queries against Nonstop SQL. However, most of the 80 developers work full-time on strategic aystems, Belden said, because the IS department no longer asks to create as many ad-hoc reports for end users.

# DEC touts Vaxcluster I/O servers

*Provide lower price per port than the HSC40 and HSC70 models*

BY DEREK SLATER
CW STAFF

Digital Equipment Corp. recently rolled out new I/O options for CI-bus connected Vaxcluster users. The Maynard, Mass.-based company announced two new, higher capacity intelligent I/O servers, along with upgraded HSC I/O software and an optional 32M-byte cache module for the servers.

The new systems are available immediately and are priced at $45,500 for the 20-port HSC60 and $67,500 for the 48-port HSC90. In conjunction with the cache module and Version 6.0 of the HSC software, the servers provide higher performance at a lower price per port than the older HSC40 and HSC70 models, DEC reported.

**Disappointing prices**

However, one user said the cost is still too high.

"They're potentially important, but I'm disappointed with the pricing," said Scot Shepherd, manager of systems development at Chaparral Steel Co. in Midlothian, Texas. Chaparral uses two VAX 6520s and two 8550s in separate clusters.

"When you're considerably overpriced before, a 10% to 15% lower price per port isn't that significant," Shepherd said.

The cache module increases HSC performance in some applications and allows more users to access the same central processor or application, according to DEC.

The cache module is free of charge to users with an HSC hardware/software contract. Revisions to the HSC software allow users of DEC's ESE20 solid-state disk subsystem to handle over 1,200 I/O requests per second. Previously, the software treated the ESE20 as a magnetic disk and delivered approximately 300 requests per second.

## NEW PRODUCTS — SOFTWARE

### Development tools

Information Builders, Inc. has made Level5 Object available for the Digital Equipment Corp. VAX/VMS environment.

Level5 Object is an object-oriented applications development tool. The VAX version is compatible with a version for Microsoft Corp.'s Windows 3.0, enabling users to create applications on personal computer platforms and port them easily to VAX/VMS systems, the company reported.

Pricing on the VAX/VMS platform ranges from $1,200 to $58,000.

**Information Builders**
**1250 Broadway**
**New York, N.Y. 10001**
**(212) 736-4433**

### Applications packages

Information Retrieval Cos. has upgraded its Automated Systems Information Management (ASIM) software for the MVS environment.

ASIM builds an information repository via a set of rules and common data definitions. The repository is shared by all systems areas within the enterprise, according to the vendor.

Financial, inventory and product management information is included.

Version 4.2 adds a budgeting feature, a bar-code facility, a new graphics interface and use of IBM's Info/System Version 4.2 table list processor.

Product group pricing ranges from $15,000 to $110,000.

**IRC**
**Suite 610**
**312 W. Randolph**
**Chicago, Ill. 60606**
**(312) 726-7587**

Nordic Information Systems IBS, Inc. has upgraded its Application Software, or ASW, distribution and financial management product for the IBM Application System/400.

ASW Version 2.0 adds a graphical user interface, support for Japanese and Italian currency and Service Order Management functionality, as well as other enhancements.

Tiered pricing by AS/400 model ranges from $50,000 to $200,000.

**Nordic Information Systems**
**#105**
**9719 Lincoln Village Drive**
**Sacramento, Calif. 95827**
**(916) 366-7250**

### Languages

Chestnut Software, Inc. has announced a new release of its Lisp-to-C Translator.

The product translates Lisp-based applications into the C language on Digital Equipment Corp. VAX systems and on workstations from DEC, Data General Corp., IBM and other companies. Release 3.0 includes a foreign language interface and optimization switches that reduce application size while enhancing performance, according to the vendor.

The Translator Developer's Edition, including a runtime library of C source code, costs $11,995.

**Chestnut Software**
**636 Beacon St.**
**Boston, Mass. 02215**
**(617) 262-0914**

Acucobol, Inc. has announced Acucobol-85 Version 2.0.

Vision, the indexed file system in Acucobol-85, is machine-independent in Version 2.0. It offers users the ability to define correct alphabetization schemes for indexed files involving European character sets or mixed lowercase and uppercase letters.

The company also announced that Acucobol-85 will add support for relational database management systems from Informix Software, Inc., Oracle Corp. and other vendors.

The product is available for Unix and Unix variant operating systems, VMS, DOS and OS/2. Pricing ranges from $1,313 to $16,800.

**Acucobol**
**Suite 201**
**7950 Silverton Ave.**
**San Diego, Calif. 92126**
**(619) 689-7220**

### Unix software

Sirius Technologies, Inc. has developed Fingertip Librarian, an on-line reference library for Unix workstations.

The program manages on-line documentation and provides comprehensive indexing, keyword searches, context-sensitive Help and user annotation.

The company announced a series of Fingertip Online Books for use with the product, including general reference works on Unix, Sun Microsystems, Inc.'s workstation platform and X Window System.

The Fingertip Librarian costs $495 for a single-user license. Online Books cost $195 each.

**Sirius Technologies**
**3456 Mount Ariane Drive**
**San Diego, Calif. 92111**
**(619) 467-1342**

Logos Corp. has introduced Version 7.0 of the Logos Intelligent, Automatic Natural Language Translation Software for Unix.

The Logos software translates English- and German-language texts into English, German, French, Spanish and Italian. It also includes interactive systems for posttranslation editing.

Pricing ranges from $75,000 to $150,000 per language pair. The Unix version will initially be offered on Sun Microsystems, Inc. workstations.

**Logos**
**333 Elm St.**
**Dedham, Mass. 02026**
**(617) 326-7600**

## HARDWARE

### I/O devices

Folsom Research, Inc. has expanded its Video/Scan line of video scan converter and frame grabber equipment.

Video/Scan converts high-resolution video from workstations to standard television video formats. New versions of Video/Scan support Digital Equipment Corp.'s Decstation 5000 and Hewlett-Packard Co.'s HP Apollo 9000 Series 700 workstations.

The cost has been lowered from $13,900 to $9,950.

**Folsom Research**
**526 E. Bidwell St.**
**Folsom, Calif. 95630**
**(916) 983-1500**

### Data storage

The Megastor division of CFR Associates, Inc. has announced the Megastor/6000.

The tape subsystem offers close to 5G bytes of storage on a single cassette for IBM RISC System/6000 users. Data transfer rates are as high as 675K bit/sec., the firm said. Automatic tape libraries containing four to 60 cassettes are available.

Pricing ranges from $4,900 to $39,000, depending on library options.

**CFR/Megastor**
**114 Hale St.**
**Haverill, Mass. 01830**
**(508) 372-8536**

Filetek, Inc. haa announced 6T-byte capacity for its on-line Storage Machine system.

The Storage Machine now manages up to three optical disc jukeboxes, each with capacity for 288 7G-byte disk platters. It includes a Direct Access Storage Device magnetic subsystem for high-speed buffering. The Storage Machine connects to client/server networks as well as to mainframes.

A full 6T-byte system costs approximately $1.6 million.

**Filetek**
**6100 Executive Blvd.**
**Rockville, Md. 20852**
**(301) 984-1542**

COMMENTARY

*J. A. Savage*

## Who's in, who's out

Becoming "with it" isn't always easy. Perhaps you had to learn to like Bruce Springsteen after being a Frank Sinatra fan (boss to Boss) and now you have to learn to love the group Digital Underground. It may not be comfortable, and they may have to learn a few new dance steps, but some computer companies are learning new ways of doing business to be "with it."

Forget all the doomers and gloomers. Take two companies that are actually doing well these days: Hewlett-Packard and Sun Microsystems.

Sun has always been "with it." The company was one of the first to market RISC as a zingy alternative. It has a somewhat zany corporate atmosphere — a mix of fraternity pranks and serious marketing.

It seems to make money and have fun at the same time. Since Sun started with workstations, it didn't have to shed the Sinatra attitude.

Sun, however, does have the Springsteen attitude, with CEO Scott McNealy as the Boss. It knows there are new sounds and new dance steps out there but is still doing well, so why change?

While this goes over with

*Continued on page 55*

# Multiprocessor ranks growing

BY MICHAEL FITZGERALD
CW STAFF

If the IBM Personal Computer hit the PC market with a big boom, multiprocessor PCs have made a silent splash. Nonetheless, vendors continue to develop and ship products.

Everex Systems, Inc. added its name to the small list of PC vendors with multiprocessor machines, and Advanced Logic Research, Inc. (ALR) added an upgrade for its Powerpro line of dual-processor machines.

The Powerpro is a clone of Compaq Computer Corp.'s market pioneer and leader, the Systempro [CW, Nov. 12, 1990].

"When people think about a dual-processor system, they think about the Systempro," acknowledged Dave Kirkey, vice president of worldwide sales and marketing at ALR.

The Systempro ships standard with a single processor — a 33-MHz Intel Corp. 80386DX or an I486. A second processor can be added, although a Compaq spokesman said only 15% of Systempro buyers have employed it. By contrast, 50% said the ability to add a processor was a factor in their decision to buy. Analysts have estimated Compaq's overall shipments for the Systempro at between $200 million and $300 million per year.

Everex will go beyond the dual-processing market when it ships a multiprocessor version of its Step file server this month. The Step MP will support from one to six 486/33 processors and up to 128 users. It will run The Santa Cruz Operation's Unix operating system. Base configuration with one processor, 16M bytes of random-access memory with error correction control and a 330M-byte small computer systems interface hard drive will cost $17,075. The same system with two processors will list for $23,998.

**Compaq** *sold $200 million worth of its Systempro machines in 1990*

While multiprocessing is not new to workstation users and is prevalent in superserver products made by companies such as Netframe Systems, Inc. and Tricord Systems, Inc., few PC vendors have ventured to this level of systems. Everex joins Compaq, ALR and Wyse Technology, Inc. as the most prominent PC makers with multiprocessor products. The trend will likely continue, according to one analyst.

"I think it's just a matter of time for multiprocessors to catch on," said Tom Kucharvy, president of Summit Strategies, Inc. in Boston. Kucharvy said vendors see it as a wave of the future, and users will catch up. Client/server computing will drive the market.

*Continued on page 54*

# Users applaud SQLwindows upgrade

BY JEAN S. BOZMAN
CW STAFF

SAN FRANCISCO — The public demonstration of SQLwindows 3.0 at Gupta Technologies, Inc.'s developer's conference here came as a relief to many users who said they were frustrated with having to navigate through too many SQLwindows 2.0 screens.

"The new version allows you to point and click on icons and to move around an application quickly," said Stephen Byrne at RDA Consultants Ltd. in Hunt Valley, Md. "You can accomplish what you want to do without having to scroll through a long outline of the program."

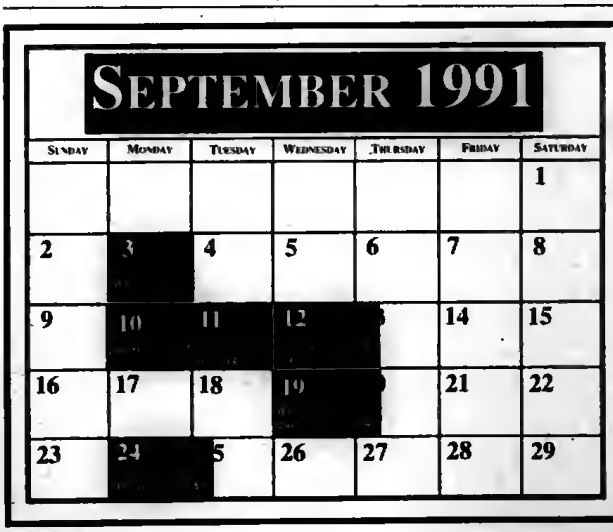
As programmers make their selections by clicking on icons, an enhanced "outliner" writes out the underlying coding logic at the top of the screen. Users must still learn the Gupta proprietary fourth-generation language SQLwindows Application Language to write applications programs.

Beta-test users were pleased with SQLwindows 3.0, a $1,295 package that current SQLwindows 2.0 users can install for an upgrade price of $150 — provided all maintenance fees have been paid. "They've taken a giant leap forward," said Mark Philpot, a consultant at Arco Products Company in Carson, Calif., which received a beta-test copy this summer. "Before this, you had to type a lot of code yourself if you wanted to add special features, like pictures, to an application. Now, you click on the toolbox, and you're adding colors and type fonts right away."

Among SQLwindows 3.0's new features are an icon-based toolbox, "includable objects" that can be reused in other applications, 150 new functions for Gupta's SQLwindows Application Language and an on-line Help system with pop-up windows. The Gupta product runs on top of Microsoft Corp.'s Windows 3.0. SQLwindows 3.0 is scheduled to arrive at customer sites by Sept. 30.

The improvements to SQLwindows should help to bolster the $20 million firm's base of roughly 10,000 SQLwindows users, split among commercial developers and corporate programmers in end-user organizations.

"It is an evolutionary improvement of the product," noted Bill Higgs, director of software research at Gartner Group/Infocorp in Santa Clara, Calif. "But it is now close to the state of the art in terms of its software technology."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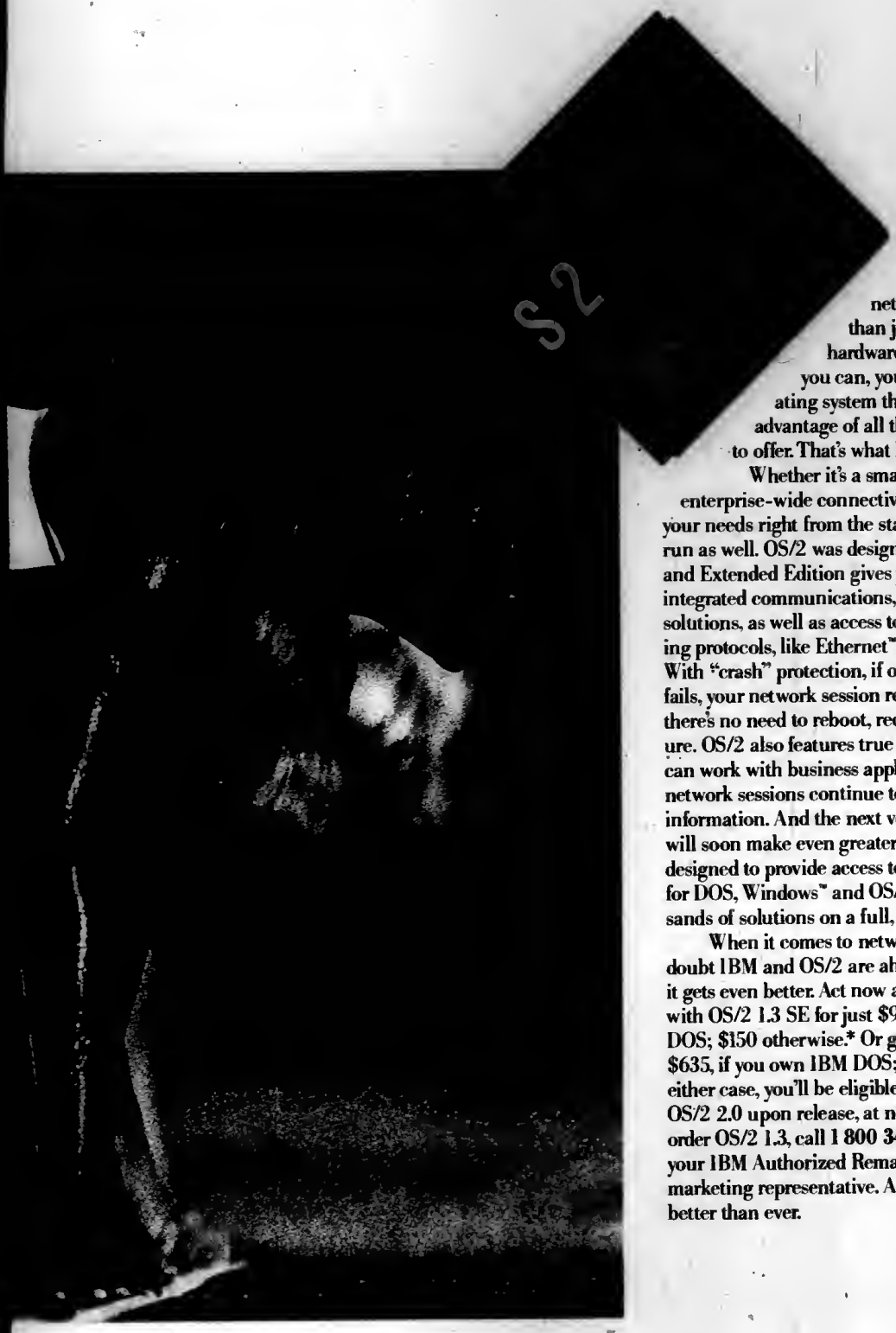


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# Impact of oil fires measured

ON SITE

BY JAMES DALY
CW STAFF

In only a few short days last February, a defeated and vindictive Iraqi army created what some consider to be the largest environmental disaster ever known. After emptying oil tankers into the Persian Gulf, Iraqi soldiers dynamited and set ablaze hundreds of oil wells in Kuwait, according to U.S. Department of Defense officials.

Six months later, hundreds of fires still twist and roar like flaming tornadoes. The smoke from the blazes — a mix of soot, oil droplets and desert dust — coats the land. The dire situation has sent scientists scrambling to determine the environmental and medical impact of the conflagration and the plumes, which sometimes tower 20,000 feet high.

One such high-tech initiative was recently conducted by a finely tuned set of cooperating research organizations that included the National Science Foundation, the University of Washington, Pacific Northwest Laboratories and Lawrence Livermore National Laboratory.

**Research under way**

The group's goal was multifaceted: to determine how the plumes will alter regional and global air and surface temperatures and to measure the rate at which the plume loses its toxic properties as it is transported through the atmosphere. This data will enable the scientists to calculate the potential for toxic deposits in agricultural regions in Europe.

The fires also offer the grimmer opportunity to test aspects of the nuclear winter hypothesis, which predicts that severe cooling could result from smoke clouds reflecting sunlight.

In late July, scientists arrived in the Persian Gulf to begin flights on computer-equipped aircraft in the smoke-darkened skies to sample downwind air up to 1,000 kilometers from the well fires, according to Jake Hales, manager of the atmospheric sciences department at Pacific Northwest Laboratories in Richland, Wash.

Before a single plane took off, however, the pilots needed to know exactly where the smoke was. That sounds easier than it is. "The aircraft don't have any problem finding the most visible part of the plume, but the difficulty comes when you get downwind and the plume is so diffuse that you can't see it directly," said Tom Sullivan, group leader of the Atmospheric Release Advisory Capability (ARAC) team at Lawrence Livermore National Laboratory in Livermore, Calif.

ARAC provided the vital meteorological forecasts. It received weather forecasts from the Air Force Global Weather Central in Omaha and fed them into a trio of Digital Equipment Corp. VAX 8550s and a 6000-410. This information was meshed with geographical data from the Defense Mapping Agency to determine how the terrain would affect the flow of the plumes and then was sent to the gulf twice daily. "We wanted every flight to count," Sullivan said.

The main data-gathering devices in the gulf were two small but heavily instrumented aircraft. A four-engine Electra owned by the National Science Foundation used a sophisticated laser beam-based system to track vertical and horizontal smoke plume movements. Meanwhile, the University of Washington's Convair used an on-board Intel Corp. 80386-based IBM PC clone and an Apple Computer, Inc. Macintosh CI to study the smoke's optical properties — how the particles absorb and reflect light.

Much of the information was processed on board, Hales said. The flights often lasted up to seven hours and collected several magnetic tapes' worth of data on each journey.

The data was then sent back to the Pacific Northwest Laboratories, where it was placed on a Sun Microsystems, Inc. Sparcstation and is now being used to estimate how much oil is burning and whether there is sufficient smoke to alter air and surface temperatures.

**Early results**

How much harm will be caused by the fires? Early downwind tests have found a high concentration of particulates, which are emerging as a major culprit in lung disease. Fortunately, the fires lack the energy to pump contaminants directly into the stratosphere, Sullivan said, so the smoke may not cause the climatic change some had predicted.

Although some of the smoke has already circled the earth several times, much of it also washed earthward when it drifted into the monsoon pattern over India.

The situation remains nightmarish. Hales snapped a picture of one vicious well fire. When the film was processed, he noticed what appeared to be the shape of a death's-head in the flames. "It was chilling," he said. "And very apropos."

# Microsoft adds to its roster of Windows-ready languages

BY CHRISTOPHER LINDQUIST
CW STAFF

REDMOND, Wash. — Microsoft Corp. added to its suite of programming languages that support the Windows 3.0 environment recently with the announcement of Microsoft Cobol Version 4.5.

The latest release of the personal computer-based Cobol package comes with the Quickwin library, which reportedly enables programmers to port DOS-based Cobol applications to Windows without changes. Dynamic Link Libraries, which can be created in other languages, are also supported by Version 4.5. In addition, programmers can use the package to develop complete Windows-based applications from the ground up.

Microsoft is offering a competitive upgrade plan for anyone currently using Cobol compilers from Realia, Inc., Ryan McFarland Corp., Language Processors, Inc., Acucobol, Inc. and MBP Software and Systems Technology, Inc. The price under the plan is $395. The usual retail price for Version 4.5 is $900.

Registered users of previous Microsoft Cobol versions can upgrade for $150.

# QEMM is upgraded

BY CHRISTOPHER LINDQUIST
CW STAFF

Quarterdeck Office Systems, Inc. was under full sail recently, releasing an enhanced version of its expanded memory manager and entering into a joint development agreement with DOS extender vendor Rational Systems, Inc.

Quarterdeck Expanded Memory Manager-386 (QEMM-386) Version 6.0 has an improved Optimize routine that leaves more memory available for DOS applications:

- Optimize can process "embedded" batch files in the user's AUTOEXEC.BAT file.
- The product excludes certain areas of high memory used by device drivers and terminate-and-stay-resident (TSR) programs, helping to avoid hardware conflicts.
- Users can browse and modify their list of TSRs and device drivers, allowing "what-if" configuration.
- Support for the "suspend/resume" feature found in many battery-powered laptop computers is now included. QEMM Version 6.0 is due to ship next month for $99.95. Current users may upgrade for $30.

Through its arrangement with Rational, Quarterdeck will now be able to implement Rational's DOS extender technology in its forthcoming Desqview/X multitasking DOS environment. This will remove DOS memory limitations from Desqview/X and the X Window System applications it is intended to run. It will also provide a 32-bit operating environment that will allow easy porting of Unix and mainframe applications.


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Numbers, certainly. But a few more words and pictures, too.

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# Wyse releases lightweight notebook

BY MICHAEL FITZGERALD
CW STAFF

SAN JOSE, Calif. — Wyse Technology, Inc., best known for its monitors and terminals, has made what may be a big noise in the notebook market.

Wyse released the DecisionmateSX, a 4½-pound, 30M-byte hard drive, $2,999 Intel Corp. 80386SX-based notebook computer with a full-size keyboard, an external floppy drive and modular components. The notebook comes with 1M byte of random-access memory, expandable to 4M bytes. A 40M-byte hard drive is available for $3,399, with a 60M-byte version due later in the year.

Battery life is only 1½ hours, but Wyse offers an optional $149 battery pack that adds up to 2½ hours of battery life. Both packs can be recharged in 90 minutes.

The modular components are a fax/modem ($199), a second serial port ($45) and a mouse pad ($119). Traveling Software, Inc.'s Batterywatch and Laplink packages are bundled with the DecisionmateSX, as is a suspend/resume facility.

One analyst said the external floppy and low battery life would not hurt the Wyse machine.

"I don't see [the floppy] as a drawback," said Linda Kiley, senior research analyst at BIS Strategic Decisions, a Norwell, Mass.-based subsidiary of Nynex Corp. "Mostly you're doing stuff on your hard drive anyway."

Kiley said the machine, with its modularity, full-size keyboard and light weight, was probably differentiated enough to carve out a presence in the market.

Wyse also introduced the Decision 486/33, a $3,799 desktop PC based on Intel's 33-MHz I486 chip. Wyse also released four more models and cut prices on its existing product line of monitors and PCs between 20% and 35% to bring list pricing more in line with street pricing, the firm said.

# Multiprocessor

FROM PAGE 47

"With traditional file server implications, there is no need for [multiprocessing] because the computers are I/O-bound," Kucharvy said. "But as you move to a client/server environment, where you offload client applications to a server, you will need more of that capability."

Kucharvy said Novell, Inc.'s simultaneous dominance of the network operating system market and seeming reluctance to release a multiprocessor version of its flagship Netware product have slowed the multiprocessor market. Currently, Unix and Banyan Systems, Inc.'s Virtual Networking Software product are the predominant multiprocessor operating systems.

But even without Novell, Kucharvy said, he thinks the multiprocessor market will grow. He explained that these computers will become multiuser systems, treading on conventional minicomputer territory.

ALR originally entered the dual-processor market in part to differentiate itself from other clone makers, Kirkey said.

"As processors get faster and systems become more complex, I think there seems to be a bit of a separation between companies," Kirkey said. He added that he thinks ALR's recent success in the reseller channel, with Computerland Corp. added to its list, comes from its ability to produce Systempro-like boxes.

ALR's Powerpro Array will ship with the 50-MHz version of the I486 when it becomes available, probably in the fourth quarter of this year. ALR will buy back 33-MHz chips from users who have purchased this version of the Powerpro. ALR is touting this as an advance over Compaq, which has acknowledged it is unlikely to ship 50-MHz versions of the Systempro.

ALR's Powerpro with a single 50-MHz processor, 17M bytes of RAM, 12 expansion slots and 420M bytes of hard disk space will cost $17,999. Other configurations cost up to $23,999.

# Bull adds work-group server systems to DPX/2 line

BY SALLY CUSACK
CW STAFF

BILLERICA, Mass. — Bull HN Information Systems, Inc. recently broadened its DPX/2 line of Unix-based desktop computers with the addition of two work-group server systems.

Leading off was the DPX/2 Model 150 EISA Tower System, a work-group server that incorporates a 33-MHz Intel Corp. I486 microprocessor in a tower platform.

Supporting up to 64 users, the DPX/2 Model 150 is capable of running Unix, DOS and Xenix applications concurrently, Bull said.

According to Bull, the Model 150 can also be integrated into The Santa Cruz Operation's Open Desktop, which allows users to implement the Open Software Foundation's OSF/Motif graphical user interface and X Windows.

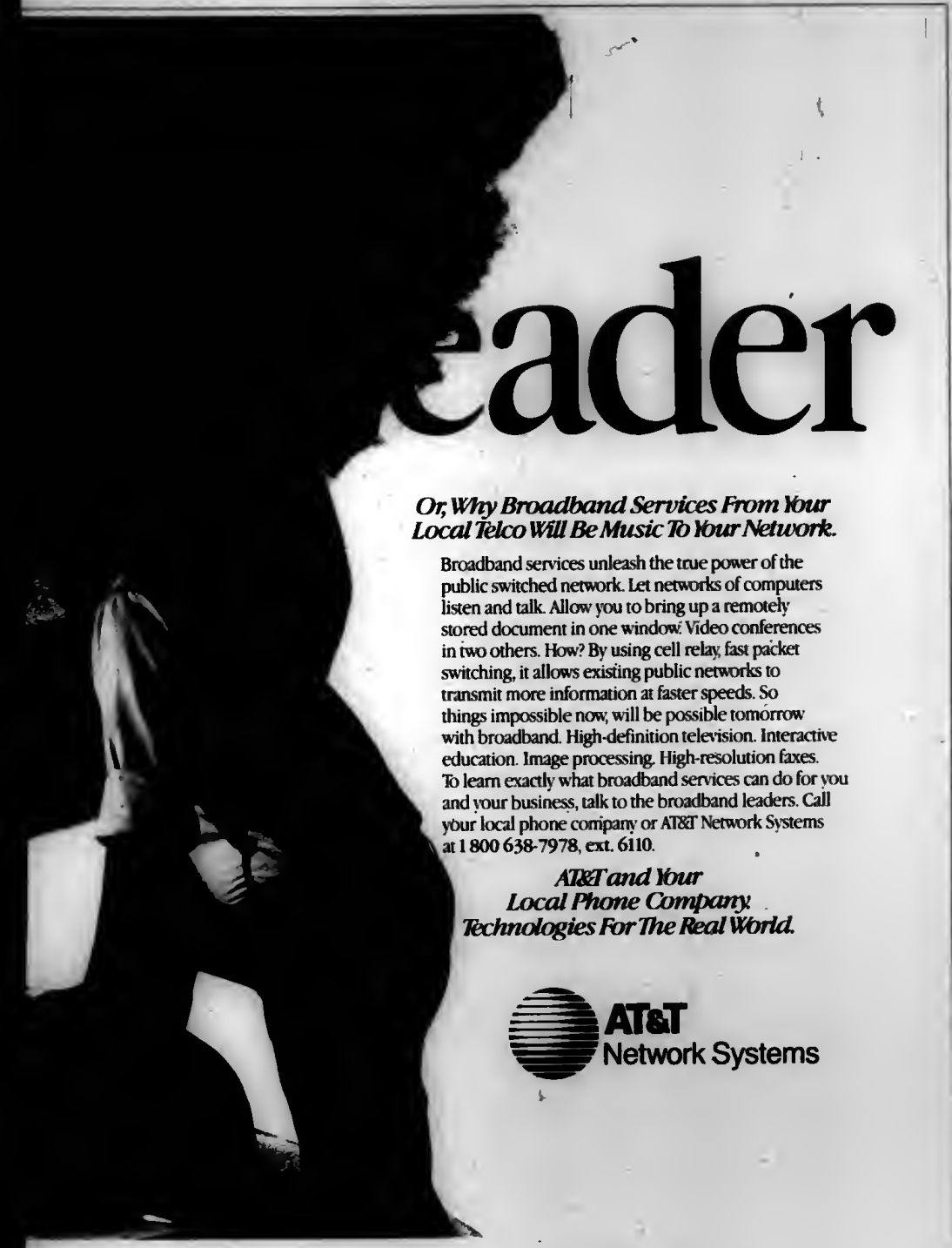
Pricing for the Model 150 EISA Tower System begins at $13,995, and a prebundled server configuration, targeted toward larger work groups, is priced from $19,995.

Bull also announced a Motorola, Inc. 68040-based 2 server, designated the DPX/2 Model 250.

Offering 52M bytes of memory, the system supports up to 88 users and is priced from $10,500 to $19,500.

Processor upgrade kits for existing Motorola 68030-based DPX/2 users are priced at $5,200.

All of the products are available immediately.



## Savage

FROM PAGE 47

some of its users, I'm hearing more and more dissatisfaction from the ranks. Sun is not learning hip hop — in this case, dancing close to users at a time when they can easily abandon their current partner for another. Sun still expects users to pant adoringly at its gate and buy whatever comes off its loading docks.

One IS manager, Rick Thomas at Rutgers University, says he's gone through six Sun sales reps in one year — six partners who've abandoned him and left him dancing in the dark (to extend the Boss metaphor). As soon as another vendor gets down to his price point, he says, he will dump Sun.

HP didn't start out being cool. Like IBM and DEC, it was saddled with a huge proprietary base that made change difficult. It was still a Sinatra fan, variously described as "Boy Scout" and "technoid" only a few years ago. But somehow, it went through the Springsteen phase real fast. Now, the company seems to be learning new steps — hip hop, if you will. Its hardware technology is beating everything else on the market, from high-end workstations to midrange systems, and it is painfully learning marketing.

HP is learning to adapt, kind of like the guy I went to the prom with. He really wanted to be cool, but he hadn't practiced in front of the mirror long enough to get the steps right. Still, I respected him for being almost good.

Even companies that are doing well are slow to be "with it." Like me with my prom date, users give them points for trying and almost making it, instead of enjoying their position as last year's (Billy) idol or the out-of-touch disco king.

I bet you're all wondering where Elvis fits in. Because Elvis is everywhere, I'd bestow that crown to IBM. Big Blue may be a little paunchy, but it still gets around.

Here's some advice for IBM: Get out of Vegas. Get back to "Jailhouse Rock," and you might have a few users swoon over you again.

Savage is a *Computerworld* West Coast senior correspondent.

# Crosstalk Mark IV 2.0: Powerful, simple

*Technology Analysis — A roundup of expert opinions about new products. Summaries written by freelance writer Suzanne Weixel.*

Crosstalk Mark IV Version 2.0 from Digital Communications Associates, Inc. (DCA) is a powerful communications package that offers features broad enough to satisfy sophisticated and novice users alike.

**Ease of use:** Users can select several interface options, including menus, commands and key combinations. The dialing directory is customizable, and there is password security for local operations.

**File transfer:** Uploading of data is made easy by menu-driven file selection, and the progress of a download is displayed on a status screen. Mark IV 2.0 uses most file-transfer protocols.

**Multitasking:** The current version of Mark IV also supports background operation so that users can work on other applications while transferring files. They can also run up to 15 simultaneous sessions.

**Service and support:** DCA's documentation is thorough. Knowledgeable technical support is free but not toll-free. There is also on-line Help.

**Value:** Unless you need communications only for very simple tasks, the list of terminal emulations and the powerful scripting language make Mark IV well worth the $245 price.

## DCA's Crosstalk Mark IV 2.0

| Reviews | Ease of use | File transfer | Multitasking | Service and support | Value | Overall |
|---|---|---|---|---|---|---|
| *PC Week* 4/22/91 | Good | A breeze | NC | Satisfactory | Good | A standout |
| *PC World* 4/91 | Excellent | Excellent | Excellent | NC | Excellent | Best buy |
| *PC Magazine* 4/30/91 | Easy setup | Fast | NC | NC | A real bargain | Top notch |
| **Users** | | | | | | |
| John Tegeler, American Door Co. | ▙ | ■ | ■ | ■ | ■ | Diverse and flexible |
| Adam Horwitz, Richardson Electronics Ltd. | ▙ | ■ | ■ | ▙ | ▙ | Superb multisession capabilities |
| Ed Girov, Girov Development Group, Inc. | ▌ | ■ | ■ | ▙ | ■ | Great multitasking |
| **Analysts** | | | | | | |
| John Dunkle, Workgroup Technologies, Inc. | ▌ | ■ | ▌ | ■ | ■ | Powerful but not very intuitive |
| Jerry Caron, Faulkner Technical Reports | ▌ | ■ | ■ | ▙ | ■ | Sophisticated |
| Donna Hawley, Datapro Research Corp. | ▙ | ▙ | NC | ▌ | ▌ | Expensive but a powerhouse |

Key: ■ Very good ▙ Good ▌ Fair ■ Poor. Reviewer evaluations are excerpts from articles. Refer to actual reviews for details. User and analyst ratings are based on telephone surveys. NC: No comment.

## Vendor financial ratings

| Analysts | Long-term stability | Short-term performance |
|---|---|---|
| Andy Schuptak, Nojaeng Securities Ltd. | ▌ | ■ |
| Stephen Shook, Interstate/Johnson Lane, Inc. | ▌ | ▙ |

DCA reported fourth-quarter earnings of $1.8 million, compared with $8.6 million for the same period last year. A onetime charge of $1.3 million was included because of a 5% work force reduction in June.

## DCA responds

*Jeff Garbers, engineering consultant:*

**Value:** Mark IV offers a range of options. You may want to have someone who understands communications do the configuring. Power users will appreciate its complex features, but novice and casual users will appreciate its broad capabilities and simple operation. Network administrators will appreciate that one product can meet everyone's needs.

# Smartcomm Exec 2.0: Thorough, no frills

## Hayes Microcomputer Product's Smartcomm Exec 2.0

| Reviews | Ease of use | File transfer | Multitasking | Service and support | Value | Overall |
|---|---|---|---|---|---|---|
| *PC Week* 4/30/91 | Satisfactory | Good | NC | Good | Good | One of the best |
| *PC Magazine* 4/30/91 | Easy to operate | Varied protocols supported | NC | Excellent | Smart purchase | Power and speed |
| *PC World** 4/91 | Excellent | Good | Poor | NC | Good | A vast improvement |
| **Users** | | | | | | |
| David Witenstein, J.W. Systems Ltd. | ■ | ■ | ■ | ■ | ▙ | Good all-around product |
| Dale Purdy, Micro Systems | ▌ | ▙ | NC | ▙ | ▙ | Could be more intuitive |
| Chris Wren, Tiger Labs, Inc. | ■ | ■ | ▙ | ▙ | ▌ | Good use of multisessioning |
| **Analysts** | | | | | | |
| John Dunkle, Workgroup Technologies, Inc. | ▌ | ■ | ▌ | ▙ | ▌ | Basic comm package |
| Jerry Caron, Faulkner Technical Reports | ■ | ■ | ▌ | ▙ | ■ | Multilingual features a plus |
| Donna Hawley, Datapro Research Corp. | ■ | NC | NC | NC | ■ | Easy to use, reasonably priced |

Key: ■ Very good ▙ Good ▌ Fair ■ Poor. Reviewer evaluations are excerpts from articles. Refer to actual reviews for details. User and analyst ratings are based on telephone surveys. NC: No comment. *Based on version 1.0A.

## Vendor background information

Hayes is based in Norcross, Ga. The company is privately held and does not release market or financial data. Established in 1977, Hayes reportedly employs 600 persons. Smartcomm Exec is reportedly equal in market share to DCA's Crosstalk product. The two products lead the market for PC communications packages.

## Hayes responds

*Mike Miller, senior software engineer:*

**Ease of use:** There are a number of built-in scripts, including a calculator, disk operation and file transfer. In the previous version, it was necessary to download scripts from the on-line service. Now they are available on the install options menu. Smartcomm Exec 2.0 tracks daily and total connect times. It is possible to make the log secure using scripts.

Smartcomm Exec 2.0 from Hayes Microcomputer Products, Inc. is a straightforward communications program that has the features most users need without a lot of extras.

**Ease of use:** For an interface, Smartcomm Exec 2.0 offers a choice of either a series of intuitive menu windows or shortcut keystrokes. It also supports a mouse. Users can switch between on-line operations and off-line setup. The script language is thorough, but reviewers noted there are no built-in, prewritten scripts.

**File transfer:** Smartcomm Exec 2.0 has varied terminal emulations and a complete list of file-transfer protocols. File transfer is very fast.

**Multitasking:** There is no support for multiple sessions, although the program can run in the background. It is possible to share modems across some local-area networks.

**Service and support:** Technical support is free but not toll-free. Documentation is complete and easy to understand. There is on-line, context-sensitive Help.

**Value:** At $129, Smartcomm Exec 2.0 offers a wide selection of protocols, strong networking capabilities and a complete script language. According to reviewers, it is a nice mix of power and simplicity at an affordable price.

NETWORK SHORTS

## FDDI progresses

**The Unshielded Twisted Pair Development Forum recently made a presentation to the American National Standards Institute Fiber Distributed Data Interface (FDDI) committee. The group's preliminary test results for running FDDI's 100M bit/sec. data rates over unshielded copper wire showed that work remains to develop signaling techniques for supporting voice-grade copper at distances of 50 to 100 meters and data-grade wiring at 100 meters.**

**Forum members include Apple Computer, Inc., AT&T Microelectronics, British Telecommunications PLC, Crescendo Communications, Inc., Hewlett-Packard Co. and Ungermann-Bass, Inc. Cabletron Systems, Inc. and IBM are pursuing their own unshielded copper FDDI alternatives.**

**3Com Corp. and Lanquest Labs recently announced the "3Compatible" Adapter Certification program under which PCs using 3Com network adapter cards can be tested by Lanquest with various network operating systems. The networks include Novell, Inc. Netware 286 and 386 and Microsoft Corp. LAN Manager. Test approval represents compatibility among various manufacturers' hardware.**

# Net managers rally behind FCC

*United in support for commission's proposal to increase competition*

ANALYSIS

BY GARY H. ANTHES
CW STAFF

A recent proposal by the Federal Communications Commission that would increase competition for local telephone companies has won near-universal support from users and managers of corporate networks.

The proposal takes note of new alternatives for metropolitan-area communications made possible by fiber-optic technology, and it would make those alternatives available at a lower cost by allowing competitors — and even customers — to use telephone company facilities in providing special-access, or private-line, services.

Pointing to the steep decline in long-distance rates that followed a 1978 court decision granting AT&T competitors the right to connect to the local public switched network, users said a similar opening up of the local market will bring more and better services at lower prices.

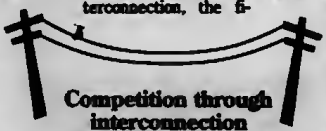
**Benefits for users**

Indeed, evidence exists that such competition is already helping users. State regulators in New York are ahead of the FCC: In 1989, they directed New York Telephone Co. to allow its competitors to connect to the local network so that they could provide intrastate private-line alternatives.

"I cannot tell you how much better a company Nynex is to deal with in Manhattan than it was four years ago," said Hank Levine, a Washington, D.C., attorney who represents some of the nation's largest financial institutions. "Now, they fall all over themselves to give you service and give it quick. Even Nynex attributes that to local competition."

In May, the FCC announced a tentative plan to require local telephone companies to permit independent local carriers as well as users to connect to the local networks through their central offices to provide interstate, private-line service, used mostly by large business customers. Separately, the FCC asked for comment on the idea of allowing that kind of connection for public switched-access services.

By allowing a competitive access provider or large user to piggyback on telephone company facilities, the competitor or user can in essence use the telephone company's local private lines as an extension of its own fiber-optic network, picking up private-line traffic for routing directly to a long-distance carrier or to another local user. Without the interconnection, the fiber-optic network would have to be extended individually to every customer site, something that is not cost-effective for sites with low-volume traffic.



**Competition through interconnection**

*Three historical milestones have pointed the way to competition in today's communications environment*

**1913** Independent telephone companies allowed to connect to the Bell long-distance services.

**1968** Carterfone decision allows connection of non-Bell equipment to Bell System.

**1978** MCI Communications Corp. wins right to connect to local public switched network to offer long-distance services.

CW Chart: Janell Genovese

**Companies respond**

Nynex Corp. supports the FCC proposal, with reservations. Other Bell companies oppose it on various grounds. In comments filed recently with the FCC, Southwestern Bell Telephone Co. said the FCC plan, which resulted from a petition brought by Metropolitan Fiber Systems, Inc. (MFS), would strengthen the "regulatorily sanctioned" competitive edge that alternate local carriers such as MFS already hold over the Bell companies.

Southwestern Bell and others also argued that the plan would siphon revenue that, through regulated rates, is used to subsidize local and rural service. That would jeopardize the "universal service" tenet on which much regulation rests, they said. The company argued as well that the plan, without an accompanying relaxation of price regulation,

*Continued on page 58*

# X terminals may oust 3270s at agency

BY JOANIE M. WEXLER
CW STAFF

OTTAWA — Unix-based servers and workstations are invading the mainframe's turf at Statistics Canada. The central information-gathering agency for Canada's federal government is thus looking to give users single-screen access to the range of hosts now storing data about the country's labor force, consumer price index, economy and population.

To allow users to tap into several sources concurrently, the agency is strongly considering purchasing a communications controller/X terminal configuration that it has been beta-testing at seven sites. The package — assembled by Harris/Adacom Corp. in Dallas and dubbed the System 9800 — includes an Intel Corp. 80386 Unix-based multifunction communications controller and an X terminal with a built-in 3270 emulator.

**Decision time**

Stats Canada is nearing a decision to replace hundreds of dumb 3270 terminals with the intelligent X terminals — manufactured by Network Computing Devices, Inc. and resold by Harris/Adacom — according to Mike Wade, section chief in the Systems Development Division.

X terminals run X Window System "server" software and allow users to manipulate data and programs on multiple hosts running X "client" software. However, X is not prominent today in the IBM world "because applications for the 3270 data stream generally won't work with X," noted Tom Nolle, president of CIMI Corp., a consultancy in Voorhees, N.J. "Harris has done more than they give themselves credit for" by programming the X terminal's local 3270 client to interpret 3270 data as X traffic, he said.

Wade said that Stats Canada will probably replace its IBM

*Continued on page 58*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# CIM application suite goes client/server

BY ELISABETH HORWITT
CW STAFF

VALHALLA, N.Y. — As the major food and chemical manufacturers accelerate their efforts toward plantwide computer-integrated manufacturing, Datalogix International, Inc. plans to fill those needs with a multivendor client/server process management system.

Expected to be formally announced next month, Global Enterprise Management System (GEMS) is a set of applications that can run and share data across IBM, Digital Equipment Corp., Hewlett-Packard Co. and The Santa Cruz Operation Unix hosts, Datalogix Chief Executive Officer Ken Arnold said.

**Full-functioned**

Like Datalogix's existing minicomputer-based applications suite, Cimpro, GEMS supports the full range of process management functions from materials requirements planning and inventory and production control down to process control, Arnold said. But with GEMS the user can implement applications on one or more hosts, on a combination of client and server or just on clients with the host acting as storage server, Arnold said.

Third-party process control systems will be able to feed information into plantwide integration platforms via a connection called Cimlinx.

At the heart of the system is a relational database management system and a fourth-generation development language, Arnold said. The system, which can be centralized or distributed across multiple servers, provides the basis for data-sharing across various application work groups and applications residing on various types of servers throughout the enterprise, he added.

The ability to share data across multiple server and client platforms is an important consideration for the many food and drug companies that have merged recently and now want to integrate a broad assortment of plant management systems, said Bruce Richardson, a vice president at Advanced Manufacturing Resources, Inc. in Cambridge, Mass.

Firms involved in mergers, such as Smithkline Beecham Corp., RJR Nabisco, Inc. and Kraft General Foods, Inc., "are trying to put together an enterprisewide strategy, and Datalogix says, 'Don't replace any of it; we'll roll up the data from all the plants and all the systems into a single coherent system,' " Richardson said.

As the No. 2 company in the process planning industry, Datalogix "does seem well-positioned to take advantage of the trend among process manufacturers to integrate process and product information across the plant or even the enterprise," Richardson added.

**GEMS at work**

Several large companies, including Monsanto Co. and Quaker Oats Co., have taken delivery of the new product and are now in the process of implementing it. Monsanto is implementing GEMS at two plants in the U.S., Arnold said.

GEMS currently supports the following RDBMS products: Ask Computer Systems, Inc.'s Ingres, Oracle Corp.'s Oracle and DEC's RDB.

Client workstations can be character-based or Windows 3.0-based or can support the Open Software Foundation's Motif, Arnold said. The hardware can be DEC's Decstation, IBM RISC System/6000, HP workstations or Intel Corp. 80386s, he added.

A future feature of the software is a natural language component that automatically generates SQL queries, Arnold said.

# X terminals

FROM PAGE 57

3174-compatible cluster controller from Fibronics International, Inc. with the 9800 controller. "The X terminal can emulate a number of devices and communicate with any of our platforms," including those from Amdahl Corp., Digital Equipment Corp., Bull HN Information Systems, Inc., Motorola, Inc. and Sun Microsystems, Inc., he said. "The 3174 cluster controllers can only do one thing: talk to the mainframe."

The $13,000 to $24,000 Harris/Adacom controller takes Systems Network Architecture traffic from the Amdahl 5990 mainframe and passes it to the X terminal as 3270 traffic, which the X terminal interprets as X. This lightens the network load by precluding the passage of overhead-heavy X protocols.

Ivan Green, systems project leader at Stats Canada, noted that an alternative to the 9800 would be to configure PCs and workstations with X server and 3270 emulation software; however, Green and Wade cited cost, functionality and software upgrade headaches as drawbacks.

"Having to keep DOS, word processing and 3270 emulation software up to date on thousands of desktops [running local applications] is impossible," Wade explained. He added that the base cost of PCs and X terminals is comparable, but "by the time you add custom boards and software to each PC, they can be quite expensive."

Wade said 3270 emulation software for X terminals is available from several vendors, but 3270 and SNA traffic must run through a mainframe-attached gateway channel. Green said the quality of 3270 emulation and MS-DOS running on X terminals is superior to that on PCs.

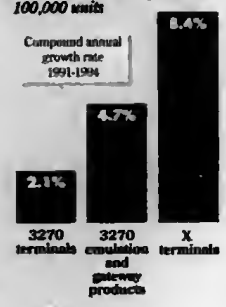
The windowing support of X is important to Stats Canada, for such applications as a central database that tracks all businesses in the country, Green said. "As supporters of the database, we must frequently iron out bugs, so we need to study both the data and the program. If we can run them side by side, that is very useful," he said.

Wade and Green mentioned a few glitches being addressed, including the 9800's seeming inability to run Software AG's Adabas/Natural query language with a 3270 interface. Also, purchasers of the Harris/Adacom configuration are today limited to Network Computing Devices terminals. Wade said that, fortuitously, the firm is already the agency's X terminal vendor of choice and that he has 200 of the devices installed. However, "we'd prefer the configuration to be independent of the vendor because you never know who's going to develop what."

Wade noted that he has asked Harris/Adacom to consider selling him the packaged board and drivers for the controller separately "because we have hundreds of 386s" that could be recycled. Similarly, he said, he might like to leverage his installed X terminals and configure them with the 3270 emulator. He said the vendor is currently considering the suggested alternative packaging.

**Terminal condition**

*X terminals are expected to outpace dumb terminals but not by leaps and bounds. The X terminal market has yet to reach 100,000 units*




Source: CIMI Corp.

# FCC calls

FROM PAGE 57

would result in a substantial loss of revenue — and even more profit because competitors would "cream-skim" the largest accounts — that would erode the ability of the Bell companies to make investments in new technology.

Users are looking for the benefits of greater competition, but they are also looking for alternatives for backing up mission-critical networks. MFS has said it will seek reciprocal agreements with the local telephone companies so that traffic can be switched from one network to another in the event of an outage. With interconnection, long-distance carriers can also ensure route diversity.

Without interconnection, corporate users have alternatives to local telephone service, but those alternatives are neither ubiquitous nor cheap. In a recent interview, FCC Chairman Alfred Sikes told *Computerworld*, "If you're Wal-Mart Stores operating in Arkansas . . . and the only game in town is the local exchange carrier, a dedicated [satellite] network can give you another access point. So technology can provide that. But in regions where there's enough business to support several local providers such as MFS or Teleport [Communications Group], I think we need to be very friendly to that kind of competition."

In comments filed with the FCC last month, users urged the commission to open local markets to competition also for interstate switched-access phone services for ordinary residential and small-business customers as well as large-business users. Teleport argued that it would be unfairly excluded from 75% of the potential market, worth about $25 billion annually, if it could not interconnect at the central office to compete for that traffic as well.

## Charge accounting

Underlying the debate about whether local exchange carriers (LEC) should be required to share their central office facilities with competitors and customers is a sticky question about interconnection charges.

Users and alternate providers want the local telephone companies to break up their bundled interconnection services and charges so they can use and pay for just what is needed at the direct, incremental cost of providing the interconnection. The LECs want more pricing flexibility, including the ability to tack on an additional charge to cover overhead costs.

LEC competitors say they should not have to contribute to LEC overhead, but they say they would be willing to pay a surcharge toward the maintenance of "universal service" as long as the LECs' customer prices include a similar contribution.

GARY H. ANTHES

## NEW PRODUCTS

### Local-area networking software

ACC Systems has announced a Token Ring interface for Digital Equipment Corp. workstations.

The ACP 3300 controller attaches directly to the Token Ring local-area network at 4M or 16M bit/sec. without an intermediate server, the firm said.

The ACP 3300 costs $5,250 and is available immediately.

**ACC Systems**
**720 Santa Barbara St.**
**Santa Barbara, Calif.**
**93101**
**(805) 963-9431**

### Systems Network Architecture

Century Analysis, Inc. has created OverSNA software for accessing remote Unix systems over IBM Systems Network Architecture (SNA) links.

OverSNA supports IBM's LU6.2 protocol, providing transparent Unix connection to the SNA backbone without requiring additional communications hardware, the company said.

OverSNA costs $1,950 per system.

**Century Analysis**
**114 Center Ave.**
**Pacheco, Calif. 94553**
**(415) 680-7800**

### Micro-to-host

Eicon Technology Corp. has released Access for OS/2.

The product provides 3270 terminal and printer emulation for systems using OS/2 Presentation Manager and allows simultaneous connection to three Token Ring-attached host systems.

A single-user license costs $395; a 25-user pack, $5,000.

**Eicon Technology**
**2196 32nd Ave.**
**Montreal, Quebec H8T 3H7**
**(514) 631-2592**

# Relative deprivation

*Growth in IS salaries fails to keep up with other professions*

BY ALAN J. RYAN
CW STAFF

Ouch! Information systems professionals are being pinched particularly hard by the unsettled economy. Not only have IS salaries risen just 3.3% over last year's levels, but they have not kept pace with other professions, where the average pay increase for 1991 was more than 5%.

*Computerworld's* 1991 Salary Survey of Information Systems Professionals found that pay growth has slowed significantly during the past year for the 23 job titles polled, dropping 2.4% below last year's 5.7% average. Meanwhile, the average pay hikes across the nation for executives in all fields was 5.6%, and for all salaried employees, 5.2%, said Mary Lowe, project manager at the National Survey Group of William M. Mercer, Inc., in Deerfield, Ill., a compensation consulting firm.

To add insult to injury, additional cash incentives are also on the decline, and 11% of the companies polled have salary freezes in effect, *Computerworld* found.

Joseph Rich, Mercer's principal in the high technology practice in Boston, says one reason IS salaries are not keeping pace with other professions is the fact that some of the most IS-intensive industries are among the hardest hit economically. Mergers and consolidations, which have put many IS staff members out of work, are not really benefitting the survivors. Pared down staffs are inheriting extra work but generally not receiving big hikes in compensation.

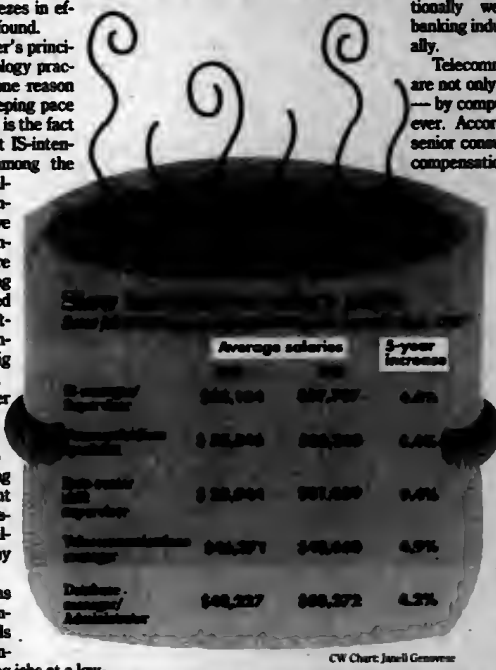
Moreover, Mercer says, the upsurge in the trend of more companies moving to end-user computing may have finally caught up with the IS profession, making IS specialists less valued in many places.

In fact, indications are that a growing number of IS professionals are experiencing downward mobility — taking jobs at a lower title and salary level. Jay Gaines, placement specialist for high-level IS executive placement firm Jay Gaines & Co. in New York, says he has observed the trend over the past year. The reasons? IS workers "were either in a company that was in a position of weakness or they were at risk; or, they were laid off."

IS growth at the regional level will basically echo the general economic trends this year, Rich says. "Where the best marketplaces are, period, are the best marketplaces for IS." There isn't much of a story that differentiates the IS profession from other fields this year as much as a couple of years ago, he added, when there was a supply and demand imbalance.

Still, the news is not all bad. Gaines says that IS salaries in the largest companies are still very attractive. The top, highly visible IS jobs at large firms are still paying well above the $200,000 level. "And if the job is on Wall Street," he adds, "the numbers for the CIO start around $500,000."

Wall Street isn't the only land of plenty for highly placed IS executives. Compensation also remains generous within the vendor community, Gaines notes, and much of the IS salary growth this year will occur




CW Chart: Janell Genovese

there. The highest top executive salaries reported in the *Computerworld* survey came from within that sector, which includes large computer hardware and software firms, systems integrators and outsourcing firms. Chief information officers and IS directors in computer-related fields participating in the *Computerworld* survey reported salaries nearing the $90,000 mark.

And it's not just the top echelon that is thriving in these companies. Local-area network managers and administrators working in computer-related firms recorded salaries that bettered those of their contemporaries in other fields, such as the traditionally well-paying utilities and banking industries, at $62,188 annually.

Telecommunications specialists are not only sought — and rewarded — by computer industry firms, however. According to Peter Tamblyn, senior consultant at New York-based compensation consulting firm Edward Perlin Associates, Inc., they are particularly vital to some companies such as investment firms that depend on wire transfers, manufacturers pursuing automated inveptory control, banks and most hospitality providers. Telecommunications specialists "are vital to the organization — companies need specialists that can run those systems and troubleshoot them," Tamblyn says. For those reasons, he adds, workers in the telecommunications field within some industries may realize above average salary growth.

Geography can also make a dollar difference. Regionally, New York remains the most lucrative work locale for IS professionals. A typical CIO in the Big Apple earns more than $94,000 annually and rakes in another $11,000 in cash incentives. Even when New York's high cost of living is factored in, these IS chiefs still top the pay scales compared with their counterparts throughout the U.S. For other IS titles, New York is typically among the top paying locales, as well.

Why? One of the reasons is simply the perception that living in New York is expensive, Mercer's Rich says. "For all jobs, New York has a higher cost of labor than it has a cost of living — New York and combat pay." Additionally, the greater New York area is home to many corporate headquarters.

New York is also home to the technology-intensive financial services industry and large Wall Street firms, says Norm Sanders, managing director of Norm Sanders Associates, Inc. in Haslet, N.J. "They have to pay for the talent that can respond to the critical needs of the business."

### Small firms pay big

But not all of the money in IS is found at the biggest firms, Tamblyn says. "Sometimes small companies have to be aggressive payers because they have to be to compete" for the talent.

Other findings of the *Computerworld* study were the following:

- Communications professionals — network managers/administrators, telecommunications managers and communications specialists in the mining and construction field outearn their counterparts in other fields such as government and education by as much as $25,000.
- Nine of the Top 10 high-paying job titles in IS — out of the 23 titles surveyed by *Computerworld* — have salaries above the $50,000 mark.
- The noble field of education continues to hold the dubious distinction of offering the lowest pay scales for nearly all IS job titles. An example: while an IS manager/supervisor in the banking and securities field will

*Continued on page 62*

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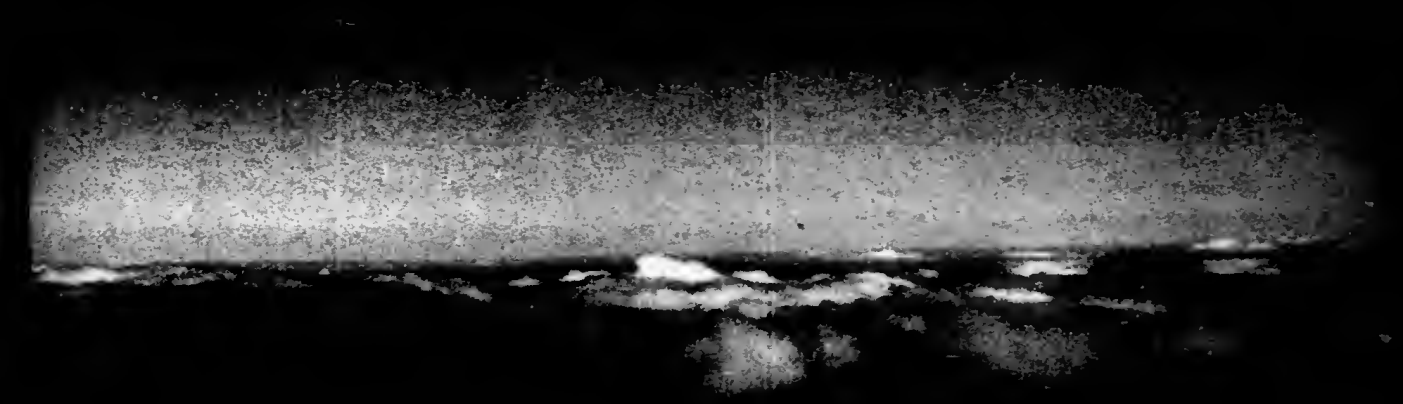

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*Continued from page 59*

typically earn about $75,000 this year, the same title in the education field will pull in just under $51,000.

- Microcomputer managers or end-user computing managers were the only titles in the study to have taken a drop in pay for 1991. In fact, pay for that title dropped by 2.5% over last year, from $47,601 in 1990 to $46,397 this year.
- The lowest-paying IS job in the survey is a programmer in the field of wholesale/retail. The typical holder of that title in that field will earn, on average, $25,698 in 1991. Put that same job in the Seattle/Portland/Spokane area, and the pay drops a little lower, to $25,586.
- Boston topped the list of places to avoid because it has the highest incidence of IS salary freezes in the country, according to the *Computerworld* study. A full 19% of the respondents from the Beantown area say they currently have a salary freeze in effect. Another 15% of the Boston-area respondents said if they do have salary increases, they are less frequent than they used to be.
- Forty percent of the respondents in the Phoenix/Tucson area said they believe their department's salaries are worse than other organizations in their geographic region, but that their benefits package is better.
- The Baltimore/Washington, D.C. area proved to have the toughest time filling vacant senior-level IS positions, with respondents saying the average time to fill such a job was 110 days. By contrast, filling top-level posts in New York took 57 days.
- When mid-level IS positions were open, respondents from Baltimore/Washington, D.C., again faced the most difficulty in filling those slots, with an average of 80 days. In the Miami/Tampa/Orlando area, filling mid-level IS positions took 39 days.
- Filling IS entry-level jobs was easiest in Denver (26 days), Boston (28 days) and the Miami/Tampa/Orlando areas (28 days). In metropolitan Chicago, the same types of jobs were filled in 36 days.

COMPUTERWORLD ANNUAL SALARY SURVEY

## Little extras get smaller

*The recession is taking its toll on average bonuses and other nonsalary cash compensation for IS professionals in general*

| IS Title | 1991 | 1990 |
|---|---|---|
| CIO/Vice President/Director of IS | $7,890 | $8,581 |
| IS Manager/Supervisor | $4,639 | $4,734 |
| Microcomputer manager, end-user computing | $1,962 | $2,608 |
| LAN manager/administrator | $1,611 | $1,999 |
| PC specialist/Technical support | $991 | $1,451 |
| Network manager/administrator | $2,439 | $2,702 |
| Telecommunications manager | $2,108 | $2,749 |
| Communications specialist | $1,264 | $1,445 |
| System and programming manager | $3,002 | $3,630 |
| Project manager | $2,227 | $2,246 |
| Senior systems analyst | $1,690 | $1,788 |
| Systems analyst | $1,102 | $1,782 |
| Senior programmer/analyst | $1,352 | $1,696 |
| Programmer/Analyst | $1,060 | $1,306 |
| Senior programmer | $1,168 | $1,105 |
| Programmer | $789 | $1,125 |
| Technical services manager | $2,794 | $3,174 |
| Senior operating systems programmer | $1,557 | $1,323 |
| Operating systems programmer | $720 | $1,301 |
| Data center or operations manager | $2,050 | $2,005 |
| Data center shift supervisor | $883 | $1,197 |
| Database manager/administrator | $2,547 | $2,193 |
| Database analyst | $1,195 | $1,489 |

Source: Annual *Computerworld* salary survey

CW Chart: Michael Siggins

## Counting the days

*On average, it takes a month to fill even entry-level IS vacancies*

How many working days (average) did it take to fill your last IS position?

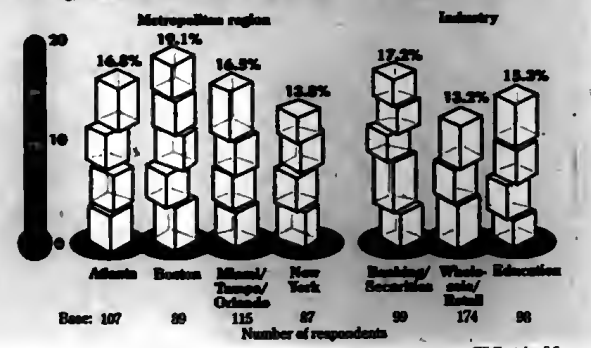
| | Entry-level position | Middle-management position | Senior-level position |
|---|---|---|---|
| None | 2% | 3% | 4% |
| Less than 7 | 10% | 3% | 3% |
| 7-14 | 17% | 7% | 5% |
| 15-21 | 17% | 11% | 8% |
| 22-28 | 2% | 2% | 1% |
| 29-35 | 24% | 21% | 15% |
| 36-59 | 8% | 13% | 11% |
| 60-89 | 13% | 17% | 18% |
| 90-119 | 5% | 12% | 18% |
| 120 or more | 2% | 11% | 17% |

Source: Computer Intelligence, Inc.

CW Chart: Michael Siggins

## Cold climates for IS

*Nearly 11% of all companies polled have a salary freeze in effect. Eastern seaboard cities and banking, education and retail industries have been hardest hit.*




CW Chart: Janell Genovese

## Bigger usually is better

*The size of the company can make a big difference in pay and incentives*

| IS position | Companies with revenues under $50M | | Companies with revenues between $50M and $499.9M | | Companies with revenues of $500M and over | |
|---|---|---|---|---|---|---|
| | $60,134 | $5,006 | $70,870 | $7,419 | $96,685 | $13,820 |
| IS Manager/Supervisor | $51,219 | $3,113 | $55,083 | $3,712 | $69,139 | $8,080 |
| | $38,709 | $3,474 | $44,649 | $1,404 | $52,721 | $2,312 |
| LAN manager/administrator | $44,510 | $1,893 | $38,676 | $1,686 | $44,545 | $1,918 |
| | $46,969 | $2,365 | $45,523 | $1,472 | $54,733 | $3,449 |
| Systems and programming manager | $62,145 | $2,413 | $59,192 | $2,513 | $82,855 | $4,292 |
| | $50,702 | $2,167 | $51,678 | $2,139 | $61,351 | $3,990 |
| Operating systems programmer | $33,625 | $305 | $40,449 | $500 | $43,806 | $1,127 |
| | $38,201 | $2,148 | $41,926 | $1,760 | $53,493 | $2,570 |
| Database manager/administrator | $44,533 | $405 | $47,617 | $1,226 | $57,860 | $5,211 |

Source: Annual *Computerworld* salary survey

CW Chart: Michael Siggins

# Where the money is

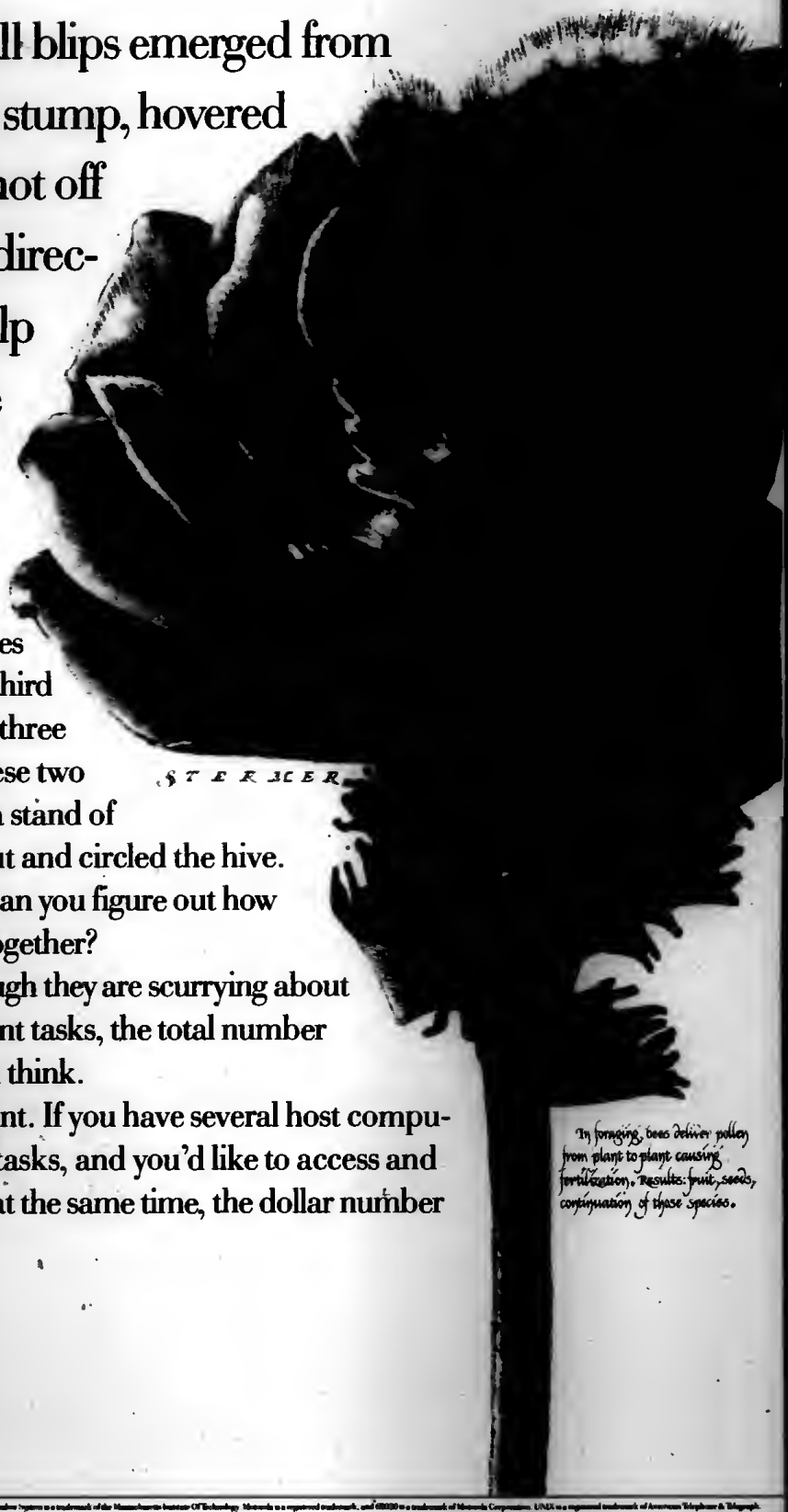
*New York, Northern California offer the highest salaries in IS*

**AVERAGE SALARIES BY REGION**

□ HIGHEST SALARY □ LOWEST SALARY

| Region | Total | Atlanta | Washington, D.C. | Boston | Chicago | Texas | Denver | Florida | Detroit | Southern California | Minneapolis | New York | Northern California | Arizona | Oregon/ Wash. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **IS MANAGEMENT** | | | | | | | | | | | | | | | |
| CIO/VP/Director of IS | $71,682 | $72,308 | $73,581 | $76,089 | $69,977 | $71,508 | $70,036 | $65,190 | $68,030 | $73,697 | $60,724 | $94,400 | $82,900 | $65,547 | $61,803 |
| IS manager/Supervisor | $57,787 | $55,245 | $58,778 | $60,792 | $58,100 | $56,650 | $55,838 | $60,170 | $53,341 | $58,593 | $52,171 | $67,280 | $62,000 | $54,341 | $53,603 |
| **END-USER SUPPORT** | | | | | | | | | | | | | | | |
| Microcomputer manager, | $46,397 | $48,368 | $49,547 | $51,395 | $43,275 | $46,379 | $40,273 | $41,603 | $45,781 | $49,158 | $44,667 | $52,750 | $53,833 | $43,770 | $42,700 |
| LAN manager/ Administrator | $41,693 | $40,500 | $41,370 | $44,053 | $44,733 | $41,845 | $35,820 | $35,238 | $42,056 | $42,472 | $52,023 | $43,667 | $43,412 | $41,688 | $37,680 |
| PC specialist/ Technical support | $32,574 | $33,539 | $32,697 | $34,270 | $34,172 | $31,784 | $29,356 | $30,414 | $33,076 | $32,854 | $31,583 | $34,829 | $37,025 | $31,944 | $30,264 |
| **COMMUNICATIONS PROFESSIONALS** | | | | | | | | | | | | | | | |
| Network manager/ Administrator | $49,080 | $47,625 | $51,979 | $45,214 | $50,350 | $51,056 | $53,250 | $45,977 | $49,200 | $47,680 | $51,800 | $52,405 | $52,441 | $42,367 | $44,500 |
| Telecommunications manager | $48,660 | $51,559 | $49,283 | $47,952 | $56,792 | $44,658 | $44,619 | $43,773 | $46,767 | $51,909 | $51,571 | $58,233 | $57,107 | $40,313 | $42,210 |
| Communications specialist | $38,333 | $37,474 | $37,266 | $42,385 | $40,962 | $38,119 | $34,889 | $33,086 | $37,842 | $38,962 | $34,423 | $44,250 | $51,818 | $31,313 | $35,763 |
| **SYSTEMS AND PROGRAMMING PERSONNEL** | | | | | | | | | | | | | | | |
| Systems and programming manager | $55,453 | $52,319 | $58,275 | $62,845 | $59,692 | $53,430 | $51,614 | $50,308 | $53,370 | $56,983 | $51,719 | $64,387 | $63,742 | $51,200 | $51,171 |
| Project manager | $51,552 | $46,889 | $55,071 | $52,652 | $51,625 | $47,433 | $48,824 | $52,219 | $48,857 | $57,867 | $48,460 | $56,828 | $58,917 | $47,794 | $48,462 |
| Senior systems analyst | $45,524 | $41,906 | $46,487 | $45,119 | $49,262 | $44,786 | $45,365 | $42,500 | $43,629 | $46,273 | $42,200 | $51,340 | $52,311 | $41,962 | $42,191 |
| Systems analyst | $39,548 | $36,441 | $41,379 | $38,522 | $44,375 | $40,981 | $37,028 | $36,729 | $40,207 | $40,658 | $37,185 | $42,865 | $44,848 | $35,885 | $36,869 |
| Senior programmer/ Analyst | $42,246 | $37,871 | $43,244 | $42,950 | $39,571 | $40,821 | $41,576 | $38,276 | $39,558 | $43,886 | $39,718 | $46,208 | $58,793 | $40,565 | $37,878 |
| Programmer/Analyst | $34,675 | $32,425 | $37,047 | $34,526 | $34,333 | $34,566 | $33,923 | $32,294 | $34,431 | $37,862 | $32,971 | $38,988 | $38,961 | $31,667 | $32,678 |
| Senior programmer | $36,109 | $33,950 | $37,200 | $37,423 | $36,100 | $30,750 | $33,876 | $33,412 | $36,563 | $42,188 | $32,100 | $39,231 | $46,727 | $39,188 | $32,267 |
| Programmer | $28,835 | $26,362 | $32,625 | $31,050 | $27,696 | $26,804 | $27,346 | $27,186 | $29,413 | $30,444 | $27,014 | $32,786 | $32,619 | $29,588 | $25,586 |
| **TECHNICAL SERVICES AND OPERATIONS PERSONNEL** | | | | | | | | | | | | | | | |
| Technical services manager | $55,031 | $47,975 | $58,397 | $57,955 | $60,952 | $55,577 | $45,389 | $49,530 | $54,700 | $56,536 | $53,000 | $63,820 | $62,870 | $48,964 | $50,105 |
| Senior operating systems programmer | $49,679 | $42,344 | $53,457 | $53,464 | $53,808 | $49,853 | $48,893 | $44,083 | $50,350 | $53,500 | $46,278 | $53,763 | $52,905 | $46,318 | $46,381 |
| Operating systems programmer | $40,454 | $36,900 | $43,935 | $38,321 | $40,706 | $42,423 | $40,636 | $38,450 | $39,190 | $42,250 | $35,750 | $45,438 | $45,684 | $34,714 | $37,687 |
| Data center or operations manager | $44,393 | $39,167 | $42,733 | $60,068 | $48,306 | $42,064 | $43,208 | $39,293 | $43,146 | $46,517 | $37,803 | $51,935 | $47,795 | $43,022 | $40,635 |
| Data center shift supervisor | $31,669 | $26,403 | $32,639 | $32,393 | $32,232 | $31,952 | $29,258 | $28,367 | $33,886 | $34,409 | $29,440 | $36,769 | $36,804 | $30,824 | $32,643 |
| **DATABASE GROUP** | | | | | | | | | | | | | | | |
| Database manager/ Administrator | $50,272 | $45,467 | $52,804 | $54,115 | $49,971 | $51,750 | $47,553 | $47,375 | $49,885 | $50,833 | $49,907 | $53,083 | $61,333 | $43,000 | $48,176 |
| Database analyst | $42,677 | $39,857 | $45,036 | $47,100 | $42,423 | $39,636 | $40,682 | $39,333 | $44,042 | $47,571 | $38,643 | $41,333 | $51,620 | $36,875 | $41,357 |

# Several small blips emerged from the hollow stump, hovered briefly, then shot off in different directions to help sustain life on earth.




One-fifth of these worker bees flew to a cherry tree, one-third flew to a clover field, and three times the difference of these two numbers buzzed over to a stand of heather. One just hung out and circled the hive.

The question is, can you figure out how many bees there were altogether?

Here's a hint, though they are scurrying about working on several different tasks, the total number could be smaller than you think.

Here's another hint. If you have several host computers working on different tasks, and you'd like to access and display their information at the same time, the dollar number

In foraging, bees deliver pollen from plant to plant causing fertilization. Results: fruit, seeds, continuation of those species.

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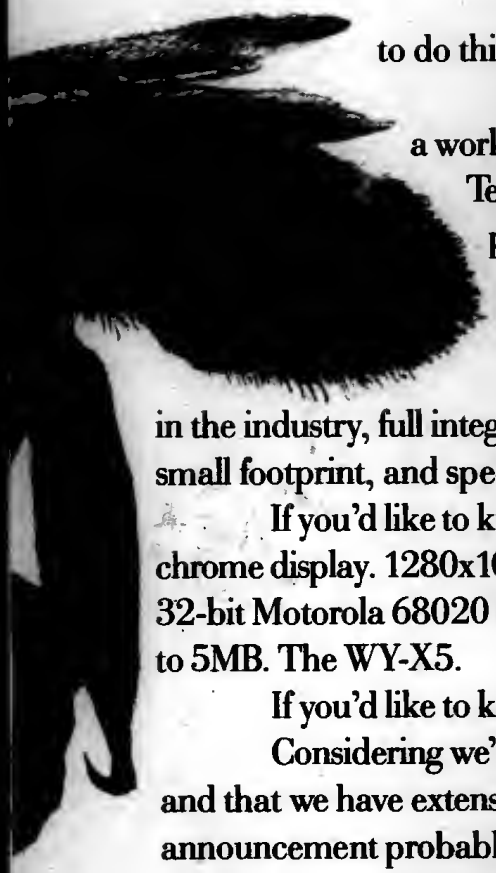

to do this could be smaller than you think. A lot smaller.

Because not only can you accomplish this without a workstation, you can now accomplish it with a Wyse X Terminal. Meaning, finally there's an X Terminal with premium features at an un-premium price. Or, conversely, finally there's a low-priced X Terminal with much more than bare bones features.

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If you'd like to know the number of bees, try the footnote.

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Of course, if you'd rather use a PC as an X Station, here too Wyse has several models to choose from. Some say the most powerful, price-competitive PCs in the industry. And who are we to argue?

If you'd like additional information on our new X Terminal, or for the name of a local reseller, call 1-800-GET WYSE. And if you'd like more Cerebral Aerobics, call for our free wall poster with 13 additional mind-stretchers.

The Wyse X Terminal has arrived. With all electronics and logic integrated into the housing. And with other typical Wyse pluses like superior display, advanced ergonomics, small footprint, raw speed and a refreshingly manageable price. The WY-X5.

But either way, Wyse can help you come up with the right solution.

So rather than being among those who are talking about all the benefits of using X, you can be among those who are actually enjoying them.

WYSE

To make sure you aren't tempted to peek at the answer, we won't print it here. But we will print the secret phone number you can dial to hear the recorded answer. No sales pitch, no strings. We'll call it our Bee-line: 800-669-1453.

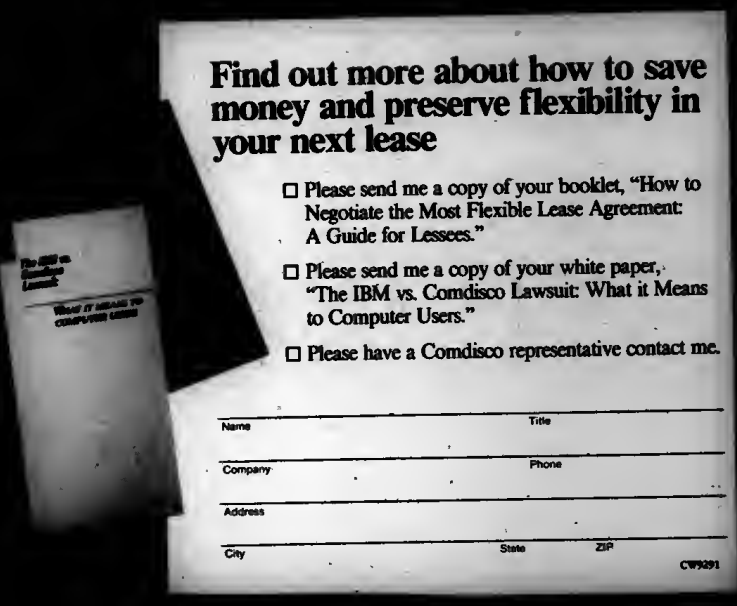
# Digging for gold

*IS jobs in mining and construction take top pay honors*

**AVERAGE SALARIES BY INDUSTRY**

□ HIGHEST SALARY □ LOWEST SALARY

| Industry | Total | Banking/ Securities | Insurance | Government | Wholesale/ Retail | Education | Utilities | Manufacturing | Health care | Mining/ Const. | Computer-related | Other |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **IS MANAGEMENT** | | | | | | | | | | | | |
| CIO/VP/Director of IS | $71,682 | $84,103 | $72,282 | $64,861 | $69,419 | $59,518 | $89,486 | $70,250 | $69,327 | $84,000 | $89,952 | $76,725 |
| IS manager/Supervisor | $57,787 | $75,088 | $62,053 | $56,734 | $57,121 | $50,912 | $65,031 | $55,006 | $51,867 | $60,676 | $59,806 | $58,019 |
| **END-USER SUPPORT** | | | | | | | | | | | | |
| Microcomputer manager | $46,397 | $45,786 | $50,111 | $46,377 | $44,194 | $36,868 | $52,023 | $48,623 | $41,278 | $54,375 | $49,900 | $47,576 |
| LAN manager/ Administrator | $41,693 | $39,833 | $36,437 | $39,868 | $42,656 | $36,095 | $44,150 | $44,028 | $37,714 | $42,000 | $62,188 | $38,547 |
| PC specialist/ Technical support | $32,574 | $32,692 | $30,286 | $32,329 | $32,822 | $28,519 | $37,071 | $33,507 | $30,833 | $35,406 | $33,417 | $32,769 |
| **COMMUNICATIONS PROFESSIONALS** | | | | | | | | | | | | |
| Network manager/ Administrator | $49,080 | $54,700 | $46,429 | $47,191 | $53,438 | $42,136 | $59,361 | $47,279 | $39,571 | $61,500 | $49,636 | $48,431 |
| Telecommunications manager | $48,660 | $46,287 | $56,200 | $46,122 | $51,000 | $41,727 | $51,895 | $49,310 | $48,500 | $67,333 | $49,962 | $52,625 |
| Communications specialist | $38,333 | $44,722 | $30,150 | $35,544 | $42,941 | $30,447 | $41,857 | $39,191 | $32,600 | $48,625 | $37,929 | $38,932 |
| **SYSTEMS AND PROGRAMMING PERSONNEL** | | | | | | | | | | | | |
| Systems and programming manager | $55,453 | $60,641 | $55,065 | $53,043 | $55,951 | $47,843 | $60,750 | $54,943 | $51,900 | $58,676 | $56,417 | $58,031 |
| Project manager | $51,552 | $58,306 | $52,472 | $49,843 | $51,819 | $41,324 | $50,727 | $49,983 | $52,336 | $53,917 | $51,194 | $54,908 |
| Senior systems analyst | $45,524 | $49,620 | $44,676 | $45,037 | $46,342 | $40,089 | $48,609 | $44,919 | $42,914 | $44,375 | $48,447 | $47,304 |
| Systems analyst | $39,548 | $41,200 | $38,633 | $38,854 | $40,875 | $37,563 | $42,775 | $39,347 | $36,841 | $36,286 | $41,143 | $40,522 |
| Senior programmer/ Analyst | $42,246 | $43,189 | $38,172 | $40,674 | $39,733 | $38,613 | $43,569 | $44,399 | $42,250 | $42,028 | $44,263 | $42,934 |
| Programmer/Analyst | $34,675 | $36,080 | $33,210 | $35,355 | $33,493 | $32,010 | $38,032 | $34,788 | $34,125 | $36,500 | $36,500 | $34,782 |
| Senior programmer | $36,109 | $37,500 | $34,125 | $36,319 | $35,750 | $30,375 | $38,500 | $36,800 | $33,750 | $36,100 | $35,200 | $36,926 |
| Programmer | $28,835 | $31,187 | $27,896 | $30,586 | $25,698 | $26,942 | $30,941 | $28,176 | $28,382 | $28,455 | $29,708 | $30,019 |
| **TECHNICAL SERVICES AND OPERATIONS PERSONNEL** | | | | | | | | | | | | |
| Technical services manager | $55,031 | $60,857 | $51,937 | $53,490 | $55,682 | $49,333 | $60,467 | $54,729 | $50,000 | $61,650 | $54,636 | $56,881 |
| Senior operating systems programmer | $49,679 | $51,553 | $45,500 | $50,113 | $51,352 | $43,312 | $50,219 | $49,074 | $48,667 | $58,500 | $56,400 | $50,593 |
| Operating systems programmer | $40,454 | $41,111 | $39,813 | $40,700 | $44,824 | $32,667 | $43,563 | $39,707 | $40,500 | $49,167 | $47,667 | $41,886 |
| Data center or operations manager | $44,393 | $43,068 | $44,250 | $50,145 | $40,470 | $41,321 | $51,630 | $42,706 | $43,920 | $49,227 | $45,333 | $46,466 |
| Data center shift supervisor | $31,669 | $32,314 | $33,971 | $33,566 | $30,027 | $28,686 | $40,306 | $29,397 | $31,684 | $40,750 | $34,188 | $32,278 |
| **DATABASE GROUP** | | | | | | | | | | | | |
| Database manager/ Administrator | $50,272 | $62,278 | $46,100 | $48,477 | $52,480 | $43,417 | $55,658 | $51,268 | $46,636 | $70,000 | $46,500 | $49,221 |
| Database analyst | $42,677 | $51,750 | $41,786 | $42,509 | $45,364 | $38,600 | $44,579 | $42,829 | $41,222 | $40,000 | $47,800 | $39,233 |



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- ☐ Please send me a copy of your booklet, "How to Negotiate the Most Flexible Lease Agreement: A Guide for Lessees."
- ☐ Please send me a copy of your white paper, "The IBM vs. Comdisco Lawsuit: What it Means to Computer Users."
- ☐ Please have a Comdisco representative contact me.

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# Five terms and conditions that could save you millions on your next lease

*Recent events in the leasing industry have shown that companies can no longer select a lessor based solely on lease rate. The terms and conditions of your agreement are now key considerations in determining your true long-term costs and hardware flexibility.*

Without flexible terms and conditions, your computer hardware options can be severely restricted when it comes time to upgrade or replace your equipment during the lease term. The question is: What can you do to protect yourself?

First, look closely at the leasing company you choose. Second, look even closer at your lease terms and conditions. And third, know your rights.

Following are some of the suggested rights you should consider when negotiating your next lease agreement.

**1 The right to add new, used, or third-party upgrades with or without financing from the original lessor.**
If your lease makes it difficult to seek competitive upgrades, your only alternative may be to upgrade through the original lessor — at prices they dictate.

But if your lease gives you the flexibility to install new, used, or third-party upgrades from the vendor of your choice, you can decide which equipment to acquire, from whom — and at a price that's right for your budget.

**2 The right to reconfigure subleased equipment.**
Most leasing companies say they will allow you to sublease. But, with a little digging, you may discover they will only allow you to sublease if the system isn't reconfigured. This is an inconvenient, impractical, and unnecessary request, especially if you're only seeking a memory upgrade.

The right to reconfigure subleased equipment is not only reasonable, but necessary if subleasing is to be a practical, economical alternative for you.

***The fact is that upgrade expenses, not the rate of your lease, are likely to have the biggest impact on your overall costs. And if your lease has restrictive upgrade terms and conditions, it could end up costing you far more than any initial lease-rate savings. In some cases, millions of dollars more.***

**3 The right to sublease to other leasing companies.**
Your lease agreement may state that your lessor will not "unreasonably withhold" its consent to allow you to sublease. But some lessors consider it reasonable to restrict your subleasing rights to end users only. They don't want independent leasing companies handling their equipment because, ultimately, convenient subleasing helps keep prices down.

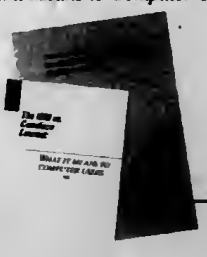
Unless you have the time, resources, and skills required to remarket your equipment directly to end users, you should negotiate the right to sublease to other leasing companies.

**4 The right to return systems with like parts at the end of the lease.**
The leasing industry has long recognized that parts are *fungible* — interchangeable — with other parts from the same manufacturer bearing the same part number.

You are the direct beneficiary of parts fungibility: leasing companies discount their upgrades because of the remarketing revenues they receive from parts removed during reconfiguration.

Without this right in your lease agreement, you may be forced to return your system at lease-end with the *exact* serial-numbered parts with which it was originally configured. Your upgrade costs could be much greater.

**5 The right to call Comdisco for our free lease-negotiation guide and white paper.**
For a comprehensive discussion of these issues, Comdisco has two free guides to help you: *How to Negotiate the Most Flexible Lease Agreement: A Guide for Lessees* and *The IBM vs. Comdisco Lawsuit: What it Means to Computer Users.*



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## Living on what you earn

*The Big Apple is undoubtedly the most expensive metropolitan area in which to live,' but even when the cost of living is factored in, IS chiefs there still make more than their counterparts in other areas. On the other hand, the low cost of living in areas such as Atlanta and Texas means lower salaries stretch further.*

### 1. New York

CIO/VP/Director of IS
Total compensation $105,591
Cost-of-living index 113.9
Adjusted compensation $92,705

### 2. Atlanta

CIO/VP/Director of IS
Total compensation $80,464
Cost-of-living index 94.4
Adjusted compensation $85,237

### 3. Dallas/Fort Worth/ Houston

CIO/VP/Director of IS
Total compensation $79,446
Cost-of-living index 94.4
Adjusted compensation $84,159

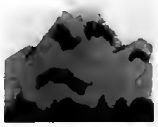
### 4. N. California/Bay Area

CIO/VP/Director of IS
Total compensation $93,740
Cost-of-living index 111.7
Adjusted compensation $83,921

### 5. Phoenix/Tucson

CIO/VP/Director of IS
Total compensation $73,662
Cost-of-living index 91.7
Adjusted compensation $80,329

### 6. Denver



CIO/VP/Director of IS
Total compensation $75,609
Cost-of-living index 94.5
Adjusted compensation $80,010

### 7. Chicago

CIO/VP/Director of IS
Total compensation $79,727
Cost-of-living index 100.8
Adjusted compensation $79,094

### 8. Boston

CIO/VP/Director of IS
Total compensation $83,040
Cost-of-living index 107.0
Adjusted compensation $77,607

### 9. Baltimore/ Washington, D.C.

CIO/VP/Director of IS
Total compensation $79,477
Cost-of-living index 103.4
Adjusted compensation $76,864

### 10. Miami/Tampa/Orlando

CIO/VP/Director of IS
Total compensation $71,010
Cost-of-living index 92.9
Adjusted compensation $76,437

### 11. Detroit

CIO/VP/Director of IS
Total compensation $75,886
Cost-of-living index 100.0
Adjusted compensation $75,886

### 12. Seattle/Portland/Spokane

CIO/VP/Director of IS
Total compensation $68,294
Cost-of-living index 92.5
Adjusted compensation $73,831

### 13. Los Angeles/San Diego

CIO/VP/Director of IS
Total compensation $81,358
Cost-of-living index 111.2
Adjusted compensation $73,164

### 14. Minneapolis/St. Paul

CIO/VP/Director of IS
Total compensation $66,518
Cost-of-living index 99.0
Adjusted compensation $67,190

**Compensation divided by the cost-of-living index and multiplied by 100. The index, which includes income taxes, was devised by Associates for International Research, Inc.*

CW Chart: Janell Genovese

## Survey methodology

***Computerworld*'s fifth annual Salary Survey of Information Systems Professionals was completed in July by the Research Services unit of IDG Communications, Inc.**

**The survey was mailed to 9,000 IS professionals using mailing lists from four sources: the Association for Systems Management membership list, the Applied Computer Research directory of top IS executives, the Installed Technology International file of top IS executives at Fortune 1,000 organizations and affiliates and *Computerworld*.**

**The *Computerworld* portion of the listing came from two sources: companies ranked among the 1990 *Computerworld Premier 100* as well as *Computerworld* subscribers who are top executives and managers of IS organizations.**

**In total, the lists contained 17,797 unduplicated names, which were then narrowed down randomly by geographic region. The 1,416 completed questionnaires constituted a response rate of 16%.**

**The typical survey respondent was male (82%) and between the ages of 35 and 54 (73%). On average, those holding the title of chief information officer, vice president or director of IS had 16 years of experience in the IS field.**

## High pay not always best

Salary satisfaction seems to have as much or more to do with where you live and work as with what you are actually paid.

Although IS salaries in Texas and the Minneapolis/St. Paul area are not notably high, IS professionals in those places are considerably more likely than their counterparts in other locales to say they are satisfied with their pay.

Seventy-three percent of IS professionals from Texas and 72% of those from the Minneapolis/St. Paul region responding to *Computerworld's* 1991 salary survey said they thought the contents of their pay envelopes were fair.

IS workers in the Phoenix/ Tucson area are also quite satisfied with their pay — 65% of the respondents from that area said they considered their pay fair — even though salaries in this locale were the lowest in the nation for eight of the 23 job categories surveyed.

IS professionals in Atlanta are less satisfied with the monetary rewards for their labor: 43% of the respondents from that area said they are not fairly compensated. When the cost-of-living index is factored in for Atlanta, the CIO paycheck ranked second only to New York City. However, Atlanta is also home to the lowest pay for five of the titles surveyed.

Interestingly, 33% of those working in the Northern California/Bay Area said their pay is worse than at other companies in their region, and 37% of the respondents from that region said they are not fairly compensated for their jobs. On the rankings of high-paying areas for IS workers, however, Bay Area IS employees in general are among the highest paid in the country.

Benefits packages seem to act as something of an equalizing factor. While the majority of IS workers in all of the regions surveyed felt their benefits packages were about the same as those of other companies in their regions, 40% of respondents located in the Phoenix/ Tucson area said their benefits were better than those of other companies, while 30% of respondents in the Minneapolis/St. Paul area said they thought their employers' benefits programs were below par for the region.

ALAN J. RYAN

# PC spreadsheets

***As users clamor for bells and whistles, purchasers tangle with application and database linking, not to mention Windows compatibility***

BY ALAN RADDING

Judy Brown faces a seemingly no-win situation. As microcomputer manager at Fox Valley Technical College in Appleton, Wis., she is trying to select the school's new spreadsheet. Her list of evaluation criteria is dizzying — not so much because of its length but because of the "trade-off factor."

As Brown and many other spreadsheet buyers have discovered, no spreadsheet package has everything. One may offer superior presentation graphics but poor macro portability. Another may be able to reduce the spreadsheet to fit on a standard piece of paper but has no outliner to collapse the spreadsheet contents into summary form.

Simply trying to choose among the multiplicity of feature variations — print reducers, outliners, equation solvers, presentation graphics and annotation — can drive a buyer crazy.

But as Brown has also discovered, the frustration doesn't end there. As she juggles feature choices, she also prepares to move up to a new platform altogether — Microsoft Corp.'s Windows. Such long-term, organizationwide issues add yet another level of complexity to the spreadsheet decision — issues such as database connectivity, application linking and learning how to deal with more complex spreadsheet functions.

All of the major vendors now provide database links: Borland International, Inc.'s Quattro Pro hooks into its Paradox database; Microsoft has added SQL links to its Excel spreadsheet for connections to Oracle Corp.'s SQL Server and Ashton-Tate Corp.'s Dbase; Lotus Development Corp. has incorporated Datalens into 1-2-3 to access multiple databases; and Informix Software, Inc.'s Wingz features links into its database products.

Direct connections eliminate the need to parse data into the spreadsheet format or re-key it. "Traditionally, it'a taken about eight steps to get data from a database to a spreadsheet. Now, it's easier to get the information, and you get a higher level of data integrity," says Frank Michnoff, program director at Meta Group, Inc. in Westport, Conn.

Because this feature is relatively new, however, many users aren't sure exactly what to do with it. "We've just started using the link between Paradox and Quattro Pro," says John MacCatherine, end-user computing manager at GTEL in Thousand Oaks, Calif.

However, he adds, he has yet to see any direct benefits.

### 3-D solutions

The same is true for three-dimensional capabilities, which allow users to work on multiple spreadsheets in the same work environment. Lotus stacks individual spreadsheets in a classic 3-D array in a single file. Excel allows multiple spreadsheets to be open in the same work space. Quattro Pro lets users link a series of files to create a 3-D effect.

The purpose of 3-D is apparent: "Spreadsheets are being used for more complicated analysis. As they get bigger and more complicated, you need to find ways to deal with them," says Will Fastie, publisher of "The Fastie Report" in Baltimore.

Instead of wrestling with, say, one mammoth 12-month financial spreadsheet, the user can break the spreadsheet into 12 one-month pieces and work with them as if they were separate spreadsheets.

Financial consolidation is one area that will see a lot of 3-D use. "I wanted 3-D and waited for it," says a microcomputer manager at a California seafood products company. The company standardized on Lotus' 1-2-3 years ago and uses a variety of releases, including 3.1.

John S. Dykes

However, many users have been slow to explore the potential of 3-D. "Many spreadsheet users have trouble thinking in 2-D," says Gerard Nussbaum, MIS director at Premier Hospitals Alliance, Inc. in Westchester, Ill. The organization standardized on Quattro Pro, but "users get lost in 3-D and can't find where they want to be."

### The Windows test

While 3-D is destined to grow in popularity as users become more familiar with it, a more burning issue today is a spreadsheet's Windows compatibility. So far, there are three Windows-based spreadsheets available: Excel, Wingz and 1-2-3. Borland is expected to have a version out by the end of the year.

Lotus claimed 50% of the market in June, according to Computer Intelligence/Infocorp, a market research firm in La Jolla, Calif., but that was down from 62% earlier in the year, probably because of its slowness in shipping a Windows version. In contrast, Microsoft's Excel captured a 31% share in June, up from 19% earlier in the year.

Compatibility with the Windows environment is the litmus test for any spreadsheet at The Gillette Co. in Boston, says Greg Chetel, director of systems planning and research. Chetel is in the process of selecting a Windows-based spreadsheet.

"For us, Excel is the standard to beat." He says that he especially likes the convenience of using the mouse to click on an entire row or column or having column widths automatically

*Continued on page 70*

Radding is a free-lance writer based in Newton, Mass.

## INSIDE

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Is it a newfangled toy or the wave of the future? Page 70.

**Beyond the Basics**
There are functions you may not even know you had. Page 71.

**Product Guide**
A listing of PC spreadsheets with graphics capabilities. Page 74.

## Leading packages

**Lotus' 1-2-3 Release 2.3:**
By far the market's best-selling spreadsheet. Provides basic functionality with minimal hardware requirements. Market share slipping to popular alternatives.

**Lotus' 1-2-3 Release 3.1 and 1-2-3/G:**
Run on DOS and OS/2. Exceptional 3-D spreadsheet linking and graphics capabilities. Require significant PC resources.

**Lotus' 1-2-3 for Windows:**
Long-awaited version of industry standards bearer. Provides GUI and familiar character-based interface to ease transition. Provides innovative user-definable icon tool pallette as well as 3-D worksheet support. Works well with DDE and should facilitate further Windows base.

**Informix's Wings:**
Supports Windows, OS/2, Apple Macintosh and Unix platforms. Highly graphical spreadsheet with top-notch output capabilities and Hyperscript programming language. Oft-praised, innovative alternative to market leaders that has not yet caught on as expected in the PC world.

**Microsoft's Excel 3.0:**
Prototypical Windows-based application. High-end spreadsheet with excellent graphics capabilities. Full support for DDE to link with other Windows applications. Compatible with OS/2 and Apple Macintosh versions. Competition heating up as Lotus and Borland release supposedly excellent Windows alternatives.

**Computer Associates' Supercalc5:**
Very low-cost package. Provides high-end features such as 3-D spreadsheets, linking and graphics. Supports low-end PCs. Excellent price/performance ratio. In need of an upgrade.

**Borland's Quattro Pro 3.0:**
High-end package that supports low-end hardware via vendor's proprietary VROOMM technology. Excellent graphics and output capabilites. Built-in link to Paradox DBMS. Making a noticeable dent in Lotus' 1-2-3 Release 2.0 series' market share.

Source: Faulkner Technical Reports, Inc.

# Spreadsheets

FROM PAGE 69

accommodate the largest item.

Although be is interested in 1-2-3 for Windows, Chetel says be will be wary of its true Windows compatibility. "1-2-3 for Windows must work with non-Lotus Windows applications like Word for Windows," be says. Chetel says the new version of 1-2-3 will be the true test of Lotus' Windows compatibility.

People who have seen 1-2-3 for Windows differ in their opinions of the product. "I like 1-2-3 for Windows more than 1-2-3 for DOS," says Jack McGrath, a Hingham, Mass.-based 1-2-3 consultant and publisher of the newsletter "@Max."

On the other hand, Dick Moffat, a London, Ontario, 1-2-3 developer and consultant, says be fears Lotus' strict adherence to the Windows standard will frustrate users who discover that popular commands are changed.

### Organizational considerations

- Current hardware configuration and platforms.
- User comfort with the current spreadsheet.
- The likelihood of hardware upgrades.
- A commitment to Windows or another graphical user interface.
- The availability of training and support.
- LAN considerations.
- Cost and licensing terms.

One of the most appealing features of any Windows spreadsheets is Dynamic Data Exchange (DDE), a low-level protocol that establishes a live link between data in two different applications.

For example, once a spreadsheet has been pasted into a word processing document, any changes to the source spreadsheet will be updated in the word processing copy. Both applications must be Windows- and DDE-compliant, however.

Another Windows capability, Object Linking and Embedding (OLE), takes DDE one step further. It not only establishes a hot link between two applications, but it also allows the user to run one application inside another. That is, if spreadsheet data is put into a word processing document with OLE, the user can click on the spreadsheet and run it from within the document.

### Long-term issues

- Windows compatibility.
- Dynamic Data Exchange.
- Object Linking and Embedding.
- Connectivity to databases.
- 3-D or multiple spreadsheet linking.

"DDE and OLE are very important," especially in their future applications, such as building executive information systems (EIS), McGrath says. By clicking on the summary financial analysis supplied by the EIS, executives will be able to run the database application that supplied the data in the first place.

That's pretty far in the future, however. At this point, both users and vendors lack experience with DDE and OLE. Take it from one user who tried it out.

"I jumped at DDE the first time I saw it," says Jeff Cairns, senior systems analyst at the Employee Systems District of Pacific Bell in San Ramon, Calif., who has standardized on Excel for Windows. "I thought I could build a table of all our data elements with Excel. When a name of a data element changed, I figured we would make the change in one place."

Through DDE, be figured, it would be reflected automatically in related Windows documents.

However, Cairns found that DDE doesn't work with data in tables, and be had to scrap the project. But be is still bullish on the concept and says be expects it to work better as vendors improve on it.

Like Cairns, many users are skittish about experimenting with DDE. "Maybe we will use it as more diverse products become tightly integrated with DDE," says Bob Beaman, information center manager at BB&T Financial Corp. in Wilson, N.C.

"If the vendors whip up some canned uses for DDE, then it will be more promising," suggests Brian Moura, assistant manager of finance for the city of San Carlos, Calif.

Despite the features built into the newest spreadsheets, they may look primitive in just a few years. Already, Lotus' Improv, which runs on Next, Inc. workstations, deviates from the traditional spreadsheet look (see story at right).

### Nice-to-have features

- Outlining.
- Printing reduction.
- Presentation graphics, including 3-D.
- Text editing.
- Equation solver.

In future spreadsheets, users may refer to cells by natural business names — sales, commissions, tax, etc. — and create formulas using standard business vernacular (sales minus commissions equals net sales). The programs may have the intelligence to do things such as automatically dividing years into quarters.

While purchasers accustom themselves to new criteria today, they should also be preparing themselves for even more criteria in the future. ●

# Improv: Users happy, but others are unsure

BY MARK J. MINASI

You can't help but notice that people who have used Lotus Development Corp.'s Improv spreadsheet are pretty darn happy with it.

"I can engineer financial models five times faster with Improv than with the other spreadsheets I've worked with," says Bob Peek, president of Peek Financial Group in Windham, N.H.

Considering that this newfangled spreadsheet runs only on a Next, Inc. workstation, the burning question is how and if it will affect the future of spreadsheets in general.

First, it's important to know what people like Peek are raving about. Rather than display data in columns and rows, Improv unhooks the data from the spreadsheet, stores it in an internal database and lets users choose up to 12 ways of viewing the data.

Unlike traditional spreadsheets — which get pretty messy when you try to view data in more than two dimensions — Improv can break sales figures down into four dimensions: for instance, by month, region, salesperson and product type.

Called "data pivoting," this feature also stores these multiple "views" of the data in a database, allowing you to shift your point of view with a mouse click. The data itself is unchanged.

One important factor in Improv's impact will be how open personal computer users will be to a "new kind of spreadsheet." At this point, their level of interest seems only to have reached the curiosity point.

"For us, 'three dimensions' means consolidating a bunch of two-dimensional spreadsheets, and it doesn't sound like Improv could help us much there," says John Holte, energy analyst at the Energy Information Administration, part of the U.S. Department of Energy. The administration has been a big user of spreadsheets for large-scale modeling for years.

"On the other hand, there is a portion of the modeling process where we're just about done, and the model results are basically stored in an array of many dimensions," Holte continues. "Getting at that data would be easier with data pivoting."

Another indication of Improv's impact is how seriously it is being taken by other spreadsheet vendors. So far, neither Microsoft Corp. nor Borland International, Inc. seems terribly concerned.

"Improv is interesting stuff, but how relevant is data pivoting to the large group of spreadsheet users who only need simple spreadsheets?" asks Hank Vigil, Microsoft's group product manager for spreadsheets.

Jack Oswald, Quattro Pro's marketing manager, dismisses Improv as a specialized hybrid with limited appeal.

According to Oswald, Improv will appeal to a small group of people who need a database modeling tool more than a spreadsheet.

Oswald says he sees another big problem with Improv: the need for retraining. In order to use Improv, you've got to change the way people work, be says — which is never easy.

> THE BURNING QUESTION is how and if Lotus' Improv will affect the future of spreadsheets in general.

Jeff Anderholm, Improv's marketing manager, concedes that it takes a bit of time to learn to use the Improv features. "It's a battle. We have to convince users that it'll pay off in the long run."

Whether Lotus will start a campaign on PC turf is unclear so far. "We're working hard to bring Improv technology to other platforms so we're not scooped by the competition," Anderholm says. "Moving the product to another platform involves a lot of programming. It's tough to go from an 8M-byte 68040 platform to a 68020 or an 80386."

However, it is unlikely that future versions of Lotus' 1-2-3 will start containing Improv-like features. "We're looking at moving some Improv features to the other spreadsheet products," Anderholm says. "But to tell the truth, it would be very hard to give Improv features to 1-2-3 and have it still look like 1-2-3." A version of Improv ported to the PC environment is more likely.

Anderholm predicts Improv-like features will start showing up in competitors' products.

But will data pivoting be the "next wave" in spreadsheets or just another doodad?

No one can say for sure, but history has shown that when you give spreadsheet users more power, they use it. ●

Minasi is a partner at Moulton, Minasi & Co., a consulting firm in Arlington, Va.

# Macros growing into application developers

BY ALAN RADDING

Is it an application development language, or is it a spreadsheet?

At this point, it's hard to tell. Spreadsheet macros — originally intended as a way to automate repetitive keystrokes — have evolved into sophisticated languages using the spreadsheets' functions and commands.

With links to databases as well as Microsoft Corp.'s Windows protocols such as Dynamic Data Exchange and Object Linking and Embedding, spreadsheet developers can even call data and processes from other applications.

"I've been saying 1-2-3 was a development language for five years, but there has been a bias against taking spreadsheets seriously," says Dick Moffat, an application developer in London, Ontario, who specializes in Lotus Development Corp.'s 1-2-3.

Moffat has built applications ranging from printing text forms to running batch files to protecting data and code to ensure integrity.

While 1-2-3 is the most popular spreadsheet application development language, every major spreadsheet vendor has instituted various levels of 1-2-3 macro compatibility. This can range from automatic translation of macros to the ability to read and act on Lotus macros.

Microsoft's Excel, Borland International, Inc.'s Quattro Pro and Lotus' 1-2-3 are all regarded as comparable macro languages, although application developers have their individual favorites.

Informix Software, Inc.'s Wingz, however, is different: Its Hyperscript macro is like a fourth-generation language. In comparison, the others are in the Stone Age, says Bob Didner, senior staff consultant at Dun & Bradstreet Software in Basking Ridge, N.J. "It starts where Excel and 1-2-3 are and goes farther — almost as far as C++, almost object-oriented."

Hyperscript has a highly graphical user interface that lets users develop applications using buttons and other graphical techniques. It generates SQL code and "has incredible string-handling capabilities," Didner says.

Macros cannot actually take the place of an application development language, however. Most companies pair the spreadsheet application with something more sophisticated.

Xerox Corp. in Webster, N.Y., built an application for business analysts using 1-2-3. "Our [financial analysis] application takes care of 80% of what they need. Then the business analysts go off and do additional analysis in the spreadsheet," says Willard Hunt, manager of development/manufacturing finance at Xerox. •

# More from your spreadsheet

BY JACK MCGRATH

Some months ago, a friend in the market analysis business wished aloud for an easy way to calculate a median in his Lotus' 1-2-3 spreadsheet. When I suggested he use the @INDEX function, he looked at me in surprise. "What's @INDEX do?" he asked.

This is not a guy who rarely uses 1-2-3. But like most of the 15 million to 18 million spreadsheet users in the world, taking care of business for him doesn't mean exploring the inner recesses of his spreadsheet.

As a result, most functions in any spreadsheet are underused. For example, all of the major spreadsheets contain a function called @SYD for calculating sum-of-the-year's-digits depreciation. Because no one uses that depreciation method, almost everyone ignores that function.

What few users know, however, is that the underlying mathematics of the function make it useful in ways that have nothing to do with depreciation. The function can be used to calculate a form of consumer interest cost. It is also the easiest way to calculate a weighting factor when you have to build a flexible weighted moving average model.

The trick to using @SYD in those ways is to read the documentation and a book of simple business mathematics and compare the two. The 1-2-3 documentation shows the math that such functions perform. When you put the documentation side by side with the math required for either calculation, the similarity jumps off the page.

It's my guess that most people use no more than 10% of a spreadsheet's analytical power, but they use nearly 50% of its presentation power. So even though analytics is where most users need help, vendors play up graphics. Analytics doesn't have the same sex appeal.

McGrath is a spreadsheet consultant in Hingham, Mass.

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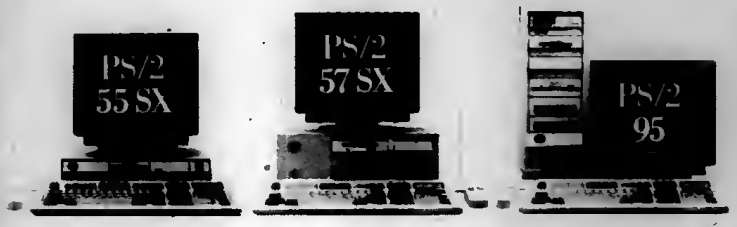


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| VENDOR | PRODUCT | HARDWARE PLATFORM | OPERATING SYSTEM | WINDOWS-COMPATIBLE OR WINDOWS SPREADSHEET | MEMORY REQUIRED (IN BYTES) | GENERAL FEATURES | GRAPHICS CAPABILITIES | MACROS/PROGRAMMING CAPABILITIES | DATA FORMATS SUPPORTED | COMPATIBLE WITH SQL LINK | PROVIDES TOOLS TO FACILITATE DATABASE ACCESS/DATABASE CAPABILITIES | APPLICATION DEVELOPMENT LANGUAGE | NETWORKS SUPPORTED | OTHER CAPABILITIES | PRICE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Borland International, Inc. (408) 438-8400 | Quattro Pro 3.0 | 8088, 286, 386, 486 | DOS 3.0 or later | Windows-compatible | 512K, 640K recommended | Minimal recalculation, background recalculation, spreadsheet linking, undo/redo commands, logical, mathematical and statistical arithmetic functions, what-if, modeling, links to external databases | Four 3-D charts, charts, clip art, color, chart preview, resize graphic output, choice of frames/borders, superimposed graphics, import/export graphics into a report, print multiple graphics on one page, customizable options, full-featured draw package | Lotus-compatible, macro learn mode, key-triggered macro, single-step execution, debugger | Imports: Dbase and SLK. Imports/exports: DIF, WKS, WK1, CSV, WQ1, WR1, WKQ, db, R2D | Yes | Yes/Displays number of database records, data queries, deletes records, extracts records, search and replace, joins database tables | C++ | Novell Advanced Netware 2.0 or later, 3 Com 3Plus 1.0 or later, all other networks that are 100% compatible with those listed and DOS 3.1 or later | Automatic save capabilities, on-line tutorial, mouse support, pull-down menus, resizable windows, scroll bars, stable windows | $99 (DOS 1.0 - 3.0); $49 (DOS 2.0 - 3.0) |
| Computer Associates International, Inc. (516) 227-3300 | CA-Super-calc | 80860, 286, 386, 486 | DOS 3.0 or later | Neither | 512K, 1M recommended | Minimal recalculation, spreadsheet linking, undo/redo commands, logical, mathematical and statistical arithmetic functions, financial functions | Four 3-D charts, charts, color, chart preview, resize graphic output, export graphics into a report, print multiple graphics on one page, customizable options | Lotus-compatible, macro learn mode, non-spreadsheet specific macros, input statement, key-triggered macro, single-step execution, automatic execution | Imports/exports ASCII, DIF, WKS, WK1, XDIF | No | No/Displays number of database records, data queries, deletes records, extracts records | None | Novell, 3Com, Banyan Vines, IBM Token Ring, IBM Net, 10Net, Starlan | On-line tutorial | $149 |
| Docusys, Inc. (314) 248-0205 | Lucid 3D | 8088, 8088, 286, 386, 486 | DOS 2.1 or later | Windows-compatible | 384K, 640K recommended | Minimal recalculation, background recalculation, spreadsheet linking, logical, mathematical and statistical arithmetic functions, auditing, user-defined | Two 3-D charts, charts, color, chart preview, resize graphic output, choice of frames/borders | Macro learn mode, non-spreadsheet specific macros, input statement, key-triggered macro, single-step execution, automatic execution, macro language and compiler | Imports/exports Docusys accounting. Imports ASCII, DBF, WKS, WK1 | No | No | None | Ethernet | Automatic save capabilities, mouse support, pull-down menus, stable windows | $99.95 |
| Datamax Computer Systems, Inc. (805) 943-6657 (800) 842-5114 | Ventana | 286, 386, 486 | DOS 3.0 or later | Neither | 640K | Background recalculation, logical, mathematical and statistical arithmetic functions, what-if, real-time data input | Charts, color, chart preview, resize graphic output, print multiple graphics on one page, customizable options | None | None | No | No | None | Ethernet | On-line tutorial, mouse support, pull-down menus, stable windows | $5,000 |
| Dynamsys, Inc. (716) 265-6060 | Gold-spread Statistical | 286, 386, 486 | DOS 3.0 or later | Neither | 384K | Background recalculation, spreadsheet linking, undo/redo commands, logical, mathematical and statistical arithmetic functions, what-if, modeling | Charts, color, charts preview, resize graphic output, choice of frames/borders, superimposed graphics, print multiple graphics on one page | Lotus-compatible, macro learn mode, input statement, key-triggered macro, single-step execution, automatic execution | Imports/exports ASCII, WKS | No | Yes/Displays number of database records, data queries, deletes records, extracts records | None | None | Automatic save capabilities, on-line tutorial, stable windows | $79.95 |
| Feldstar Software, Inc. (314) 418-2011 | Analyst One | 286, 386, 486 | DOS | Windows-compatible | 512K, 640K recommended | Minimal recalculation, background recalculation, spreadsheet linking, undo/redo commands, mathematical/arithmetic functions, what-if, modeling | Charts, color, resize graphic output, import/export graphics into a report | None | Imports/exports ASCII, DIF | No | Yes/Data queries, deletes records, extracts records | None | Ethernet, 3Com, Novell, Banyan Vines | On-line tutorial, mouse support, pull-down mouse | $275 |
| Informix Software, Inc. (913) 599-7100 (800) 438-7627 | Wingz | 286, 386, 486 | OS/2 Version 1.2, Windows 3.0 | Windows spread-sheet | 4M for OS/2, 2M for Windows 3.0 | Minimal recalculation, background recalculation, spreadsheet linking, undo/redo commands, logical, mathematical and statistical arithmetic functions, database, numeric, date/time, text, budgeting, what-if, user-defined functions, business | Eight 3-D charts, charts, clip art, color, chart preview, resize graphic output, choice of frames or borders, superimposed graphics, import/export graphics onto a report, print multiple graphics on one page, customizable options, drawing tools for freehand graphics | Macro learn mode, input statement, key-triggered macro, Hyperscript | Imports/exports ASCII, DIF, WKS, WK1, BFF, SYLK | Yes | Yes/Deletes records, extracts records | C, C++ | Same as those supported on Windows and OS/2 | Automatic save capabilities, mouse support, pull-down menus, on-line help, stable windows | $499 |
| Lotus Development Corp. (617) 577-8500 | 1-2-3 for DOS Release 2.3 | 8088 or higher | DOS 2.1 or later | Windows-compatible | 384K of RAM, 512K required for WYSIWYG | Minimal recalculation, spreadsheet linking, undo/redo commands, logical, mathematical and statistical arithmetic functions, budgeting, what-if, job costing, modeling, file viewer, auditor | One 3-D chart, charts, clip art, color, chart preview, resize graphic output, superimposed graphics, export/export graphics into a report, print multiple graphics on one page, customizable options, graph annotator | Macro learn mode, nonspreadsheet-specific macros, input statement, key-triggered macro, single-step execution, automatic execution | Imports/exports ASCII, FMT, ALL | Yes | Yes/Data queries, deletes records, extracts records, sorting | Assembler | Netware, 3Com, Banyan Vines, LAN Manager, IBM OS/2, LAN Server, PC LAN program | On-line tutorial, mouse support, dialog boxes | Standard addition $495, Network server $795, Node $495 |
| | 1-2-3 for DOS Release 3.1 | 286 or higher | DOS 3.0 or later | Windows-compatible | 1M | Minimal recalculation, background recalculation, spreadsheet linking, undo/redo commands, logical, mathematical and statistical arithmetic functions, budgeting, what-if, job costing, modeling, file viewer, auditor, 3-D, Solver | Charts, clip art, color, chart preview, superimposed graphics, import/export graphics onto a report, print multiple graphics on one page, customizable options, single-key charting | Macro learn mode, nonspreadsheet-specific macros, input statement, key-triggered macro, single-step execution, automatic execution, extensive language customized with add-in tool kit | Imports WKS. Imports/exports ASCII, DBF, WK1, ALL, FMT, FM3, WKS, Paradox, Datalens | Yes | Yes/Data queries, deletes records, extracts records, modifies records, accesses external data formats through Datalens | MSC | Netware, 3Com, Banyan Vines, LAN Manager, IBM OS/2, LAN Server, PC LAN program | Mouse support | $595 |
| | 1-2-3 for Windows | 286, 386, 486, IBM PC/AT compatibles | Windows 3.0 | Windows spread-sheet | 2M RAM | Minimal recalculation, background recalculation, spreadsheet linking, undo/redo commands, logical, statistical and mathematical arithmetic functions, budgeting, what-if, job costing, modeling, 3-D spreadsheets, Solver and Backsolver | Twenty two 3-D charts, charts, custom icons, clip art, color, chart preview, resize graphic output, choice of frames/borders, superimposed graphics, import/export graphics into a report, print multiple graphics on one page, customizable options, WYSIWYG, graph gallery, full annotation | Macro learn mode, non-spreadsheet specific macros, input statement, key-triggered macro, single-step execution, automatic execution, customizable smartcons, add-in development tool kit | Imports/exports ASCII, DIF, DBF, WKS, WK1 | Yes | Yes/Data queries, displays number of database records, deletes records, extracts records, modifies finds, macros to external databases | MSC | All Windows-supported networks | On-line tutorial, mouse support, pull-down menus, Datalens, Adobe type manager, Solver and Backsolver, stable windows | $595 |
| Microsoft Corp. (206) 882-8080 | Excel | 286, 386, 486 | DOS, OS/2 | Windows spread-sheet | 2M recommended | Minimal recalculation, background recalculation, spreadsheet linking, undo/redo commands, logical, mathematical and statistical arithmetic functions, budgeting, what-if, job costing, modeling | Twenty-four 3-D charts, charts, color, chart preview, resize graphic output, stable windows, superimposed graphics, import/export graphics into a report, print multiple graphics into a report, print multiple graphics on one page | Macro learn mode, non-spreadsheet-specific macros, key-triggered macro, single-step execution, automatic execution | Imports/exports ASCII, DIF, DBF, WKS, WK1, WK3, SYLK, Excel 2 | Yes | Yes/Displays number of database records, deletes records, extracts records, data form, custom data form | NP | LAN Manager, all Windows 3.0-compatible | Automatic save capabilities, on-line tutorial, mouse support, pull-down menus | NP |

The companies included in this chart responded to a recent survey conducted by *Computerworld*. When a vendor is unable to provide specific information about its product, the abbreviation NP (not provided) is used. When a question does not apply to a vendor's product, the abbreviation NA (not applicable) is used. Contact vendor for further product information.

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**Current GUI** (Check one):

- ❑ Presentation Mgr.
- ❑ UNIX/MOTIF
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- ❑ MAC
- ❑ Windows 3.0
- ❑ NextStep
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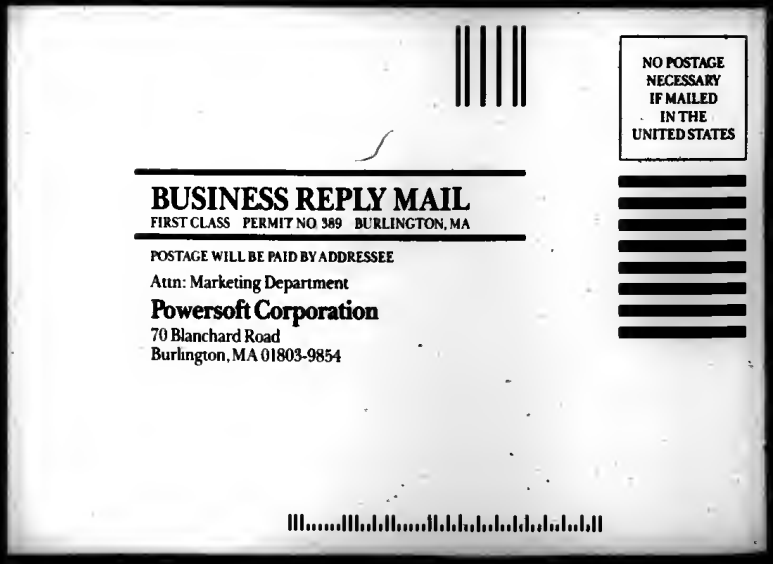

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| VENDOR | PRODUCT | HARDWARE PLATFORM | OPERATING SYSTEM | WINDOWS-COMPATIBLE OR WINDOWS SPREADSHEET | MEMORY REQUIRED (IN BYTES) | GENERAL FEATURES | GRAPHICS CAPABILITIES | MACROS/PROGRAMMING CAPABILITIES | DATA FORMATS SUPPORTED | COMPATIBLE WITH SQL LINK | PROVIDES TOOLS TO FACILITATE DATABASE ACCESS/DATABASE CAPABILITIES | APPLICATION DEVELOPMENT LANGUAGE | NETWORKS SUPPORTED | OTHER CAPABILITIES | PRICE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Open Systems, Inc. (612) 439-8011 | Harmony Spreadsheet | 286, 386, any IBM-compatible | DOS 2.1 or later | Neither | 512K | Spreadsheet linking, logical, mathematical functions | Charts, color, resize windows, import/export graphics into a group | None | Exports ASCII | No | Yes/Extracts records | C | Novell, 3Com | On-line tutorial, help screen | Contact vendor |
| Parsons Technology (319) 395-9626 (800) 223-6925 | Procalc 3-D | 8088, 286, 386, 486 | DOS 2.11 or later | Windows-compatible | 512K, 640K recommended | Minimal recalculation, spreadsheet linking, logical, mathematical and statistical arithmetic functions, budgeting, what-if, job costing, modeling | Three 3-D charts, charts, color, chart preview, import/export graphics into a report | Macro learn mode, non-spreadsheet specific macros, input statement, key-triggered macro, single-step execution, automatic execution | Imports Money Counts. Imports/exports ASCII, DIF, DBF, WKS, WK1 | No | Yes/Displays number of database records, data queries, deletes records, extracts records | None | Novell, 3Com, Banyan Vines | On-line tutorial, mouse support, pull-down menus | $89 |
| Timeworks, Inc. (708) 559-1300 | Swiftcalc | 8088, 286, 386, 486 XT | DOS | Windows-compatible | 512K | Undo/redo commands, logical and mathematical arithmetic functions, future value | Charts | Macro learn mode, input statement, key-triggered macro, single-step execution | Imports/exports ASCII | No | No | Assembler | None | Automatic save capabilities, on-line tutorial, mouse support, pull-down menus | $99.95 |
| T/Maker Research Co. (408) 988-0127 | I Hate Algebra | 286, 386, 486 | Windows 3.0 | Windows spreadsheet | 300K for program | Logical, mathematical and statistical arithmetic functions, string financial, budgeting, what-if, job costing, modeling | Charts, color, chart preview, resize graphics output, import/export graphics into a report via clipboard | Single-step execution | Imports/exports ASCII | No | No | None | None | Mouse support, pull-down menus, tunable windows | $39.95 |
| Trajectory Software (201) 447-8200 (800) 445-9293 | LEX-CALC | 386, 486 | DOS 3.0 or later | Neither | 512K, 1M recommended | Minimal recalculation, background recalculation, spreadsheet linking, undo/redo commands, logical, mathematical and statistical arithmetic functions, budgeting, what-if, job costing, etc. | Charts, clip art, color, chart preview, resize graphic output, choice of frames/borders, superimposed graphics, import/export graphics into a report, print multiple graphics on one page, customizable options | Lotus-compatible, macro learn mode, non-spreadsheet-specific macros, input statement, key-triggered macro, single-step execution, automatic execution, built-in programming command language | Imports/exports ASCII, WKS, WK1 | No | Yes/Data queries, extracts records | ANSI C | Netbios-compatible | Automatic save capabilities, mouse support, pull-down menus | $395 |
| Treas, Inc. (508) 794-9377 | ALITE | 286, 386, 486 | DOS 3.0 or later | Windows-compatible | 256K, 512K recommended | Minimal recalculation, spreadsheet linking, logical, mathematical and statistical arithmetic functions, budgeting, what-if, modeling, etc. | Charts, chart preview, resize graphic output, superimposed graphics, import/export graphics into a report | Lotus-compatible, key-triggered macro, single-step execution, automatic execution | Imports WK1 Imports/exports ASCII, WKS | No | No/Uses own database | None | Novell, Lantastic | Pull-down menus | $20 |
| | As Easy As | 286, 386, 486 | DOS 3.0 or later | Windows-compatible | 384K, 512K recommended | Minimal recalculation, spreadsheet linking, logical, mathematical and statistical arithmetic functions, budgeting, what-if, job costing, modeling, matrix operations, goal seeking, string functions | Charts, chart preview, resize graphic output, superimposed graphics, import/export graphics into a report | Lotus-compatible, macro learn mode, input statement, key-triggered macro, single-step execution, automatic execution, macros for data logging and controlling external devices | Imports/exports ASCII, DBF, WKS, WK1 | No | No/Uses own database | Pascal for add-ons | Novell, Lantastic | Pull down menus | $50 |
| Wordperfect Corp. (801) 225-5000, (800) 451-5151 | Planperfect 5.1 | 286, 386, 486, XT and AT | DOS 2.0 or later | Neither | 384K, 512K recommended | Spreadsheet linking, undo/redo commands, logical, mathematical and statistical arithmetic functions, budgeting, what-if, job costing, modeling, etc. | Three 3-D charts, charts, color, chart preview, resize graphic output, superimposed graphics, customizable options, fonts, formulas | Lotus-compatible, macro learn mode, non-spreadsheet specific macros, input statement, key-triggered macro, single-step execution, automatic execution | Imports/exports ASCII, DIF, DBF, WKS, WK1, Wordperfect | No | No/Data queries, deletes records, extracts records | Assembly | Novell, 3Com, Banyan Vines, LAN Manager TOPS, Lantastic, Stargroup | Automatic save capabilities, on-line tutorial, mouse support, pull-down menus, function keys, slash commands | $395 |

# Add-ons can expand your horizons

*Even if you can't upgrade, you can take advantage of the latest advances*

BY JEREMIAH CARON

If you don't have the hardware or memory requirements to upgrade an older spreadsheet package, you may want to consider add-on products. Spreadsheet add-ons can not only extend the life of your installed software but also maximize system resources because users can invoke the add-on software only when needed.

Most spreadsheet add-on products were designed to fill holes in Lotus Development Corp.'s 1-2-3 Release 2 series, which included the Add-In Manager to facilitate the process.

Not all products are geared for the low end, however. Users of other spreadsheets — including 1-2-3 Release 3.0, 1-2-3/G, Borland International, Inc.'s Quattro Pro and Microsoft Corp.'s Excel — may be interested in some of the ready-to-run vertical-market applications available for those products.

When you use add-on products, you cannot expect the environment to be as seamless as a new spreadsheet version. However, many users say the inconvenience is dwarfed by the associated cost savings.

The spreadsheet add-on market is broken down into several categories:

• **Word processing and database management.** Now that spreadsheets can share files with full-featured, third-party applications, the popularity of these products has diminished.

Just the same, quite a few people use word processing add-ons such as Funk Software, Inc.'s Inword, Symantec Corp.'s 4-Word and Blossom Software's Write-In. There are also some popular database management add-ons, such as Personics Corp.'s @Base, PC Publishing, Inc.'s Deja and Goldata Computer Services, Inc.'s D.A.V.E.

• **Financial analysis.** Even though most of the popular spreadsheet packages provide versatile built-in financial and forecasting capabilities, a number of popular add-on packages supply users with the often complex formulas and tables required for these tasks.

Popular financial analysis add-on packages include Intex Solutions, Inc.'s Financial Toolkit and Symantec's Budget Express.

Intex's Forecast, Business Forecast Systems' Forecalc and Isogon Corp.'s Tomorrow are examples of products that forecast the future based on facts assembled in a spreadsheet.

Frontline Systems, Inc.'s What-If Analyst and Lindo Systems, Inc.'s What's Best are popular add-ons that help users optimize nonlinear functions and solve nonlinear equations. If used properly, these sophisticated capabilities can add significantly to the basic spreadsheet's power.

In fact, Lotus added these capabilities to 1-2-3/G and Release 3.1 in the form of the Solver and Backsolver components.

• **File and data linking.** Two of the best-known file and data linking add-on packages include Goldata's @WSLINK, which creates a link between an active file and a file on disk, and Personics' Look & Link, which establishes a link between a worksheet and an ASCII text file.

• **Graphics.** The need for business users to produce quality output with spreadsheet data has always attracted a number of add-on products. The two most notable "spreadsheet publishing" add-ons — Funk Software's Allways and PC Publishing's Impress — are in fact both bundled into Lotus' 1-2-3 Releases 2.0 and 3.1, respectively.

Other printing enhancement products include Funk Software's Sideways, which rotates worksheets 90 degrees, and Intex's Jetset, which provides control over Hewlett-Packard Co. Laserjet printing tasks.

• **Security.** This is perhaps one of the most indispensable add-ons for many spreadsheet users. Isogon's 4-Sure, for example, warns the user when data-trashing actions are about to be taken, as does Intex's Guardian.

Both packages can also be set to make automatic saves at predefined intervals.

• **Spreadsheet optimization.** Other general-purpose add-on packages that can greatly enhance the spreadsheet environment include Personics' Macro Editor/Debugger macro programming tool and Seemore screen utility; Symantec's SQZ Plus data compression facility; and Funk Software's P.D.Queue, which allows users to print in the background while working with Lotus' 1-2-3 Release 2.0. •

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Caron is the senior group editor for the microcomputer-related services published by Faulkner Information Services in Pennsauken, N.J.

# Taking stock of software

***To maximize their software investment, companies need to manage their application portfolio as carefully as they do their stock portfolio***

BY IAN S. HAYES

For any sizable business, software applications represent a costly and ongoing investment. But because most companies do not think of their software programs as valuable assets, these investments are typically not managed for maximum return. A logical approach to managing software is to take a cue from the financial world: Manage it as you would an investment portfolio.

This approach has numerous benefits (see story, page 80) for those information systems organizations that choose to use it:

- It helps IS managers focus scarce financial and personnel resources on those projects that will produce the highest paybacks.
- It helps them decide whether to improve or replace an existing system.
- It allows IS to address application system requirements in a proactive manner, providing the data to facilitate budgeting and planning efforts and to develop specific action plans to improve quality where necessary.
- If performed on a regular basis, it is a baseline for developing standards and measuring progress.
- Perhaps most importantly, managing software in this way can save a company money. The typical IS budget for a large corporation is in the millions of dollars, and as much as 80% of this budget is spent on existing application systems.

Directing even a small portion of this money more effectively can reap dramatic benefits. Software portfolio management identifies productive activities to replicate and unproductive activities to avoid.

In short, using an investment portfolio approach to software asset management allows IS managers to measure what they manage in objective business terms.

In this investment portfolio model, each application system is analogous to a small software service company. Each system has a staff (programmers and managers), customers (users of the system), suppliers (data processing, software package vendors and consultants) and investors (IS and user department budgets).

A firm's IS division is the holding company that manages a portfolio of these software service companies. The senior information executive's role is similar to that of a stock fund manager, whose goal it is to maximize the return on the investments he manages. Only in the IS case, the portfolio consists of application systems rather than company stocks.

Before an IS executive invests in an existing software application, he should assess the condition and value of each application.

'Can the code be expanded to meet future needs? Is it antiquated and inhibiting production? Is it cost-effective to run and maintain? Does the system have a market? Is this market segment growing, shrinking, stable or changing? Would there be payback in improving these assets?

In the financial world, there are a number of sources of data that are used to evaluate the investment potential and quality of a target business.

Software applications should be analyzed and compared in the same manner. Information about the system, such as its quality and strategic value, should be gathered and organized into a portfolio analysis format similar to that used by securities analysts to produce their investment reports.

This format would include an evaluation of the assets (the quality of the application code), the market (the application's effectiveness in meeting the needs of the business) and the potential for growth (the application's strategic value).

In this way, the company has an effective method to assess both in-house-developed and packaged systems when allocating IS resources.

A securities analyst would use this information to decide whether to buy, sell or hold the stock of a particular company. The IS manager would use it to decide whether to discard, maintain, rewrite or replace a particular application.

### The IS tool

The vehicle for providing all of this information is a software portfolio analysis. A software portfolio analysis is a compilation of all of the high-level and detailed information necessary to develop a strategy across systems and to develop specific improvement plans for each system where improvement is merited.

The high-level summary is supplemented with details such as the number of personnel supporting the system and their costs, the backlog of maintenance requests and their value and the stability (failure rate) of the system.

These details are gathered from the maintenance records available from IS staff and

*Continued on page 78*

Hayes is manager of re-engineering services at Keane, Inc., a software development and consulting firm in Boston.

**• How to set up an application portfolio**

**• An IS spin on securities analysts' documents**

**• Decision time: Maintain? Rewrite? Discard?**

*Continued from page 77*

management. This information is easily available from sources such as library management systems.

The data supports conclusions drawn from the high-level analysis, and it provides the ability to do cost/benefit analysis. The combination of all of this data within a portfolio analysis report brings to light information — in business terms — that might force decisions that are not otherwise apparent.

For example, portfolio analysis may expose situations in which excessive resources are being used to support marginal systems. This is often the case with older applications whose functionality has slipped.

One major bank discovered it was spending a disproportionately high amount of money supporting an old system handling trusts — a business area declining in strategic importance for the bank. The bank elected to replace the system with a packaged trust system and to shift the programmers who were maintaining the old system to a more strategic customer banking application.

### Nuts and bolts

There are three major components of a thorough software portfolio analysis: a statement of objectives; a cross-system view in which the company's application systems are compared; and an application view, which is a collection of detailed evaluations of each of the applications analyzed within the cross-system view.

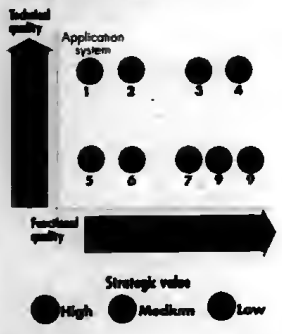
• **Statement of objectives.** It is important to consider the business objectives of the firm when conducting a software portfolio analysis. These objectives may include identifying areas for reducing IS expenditures, deciding which applications to keep after a merger between two IS departments and assessing the strategic systems needed to position the firm for the future.

As any financial expert will advise, there are different investment strategies, depending on the objectives of the investor. For example, if the objective is to identify potential cost reductions within the application areas, the IS expert would evaluate the possibilities for lowering data processing costs and reducing staff by improving productivity, deferring noncritical maintenance and lowering application failure rates.

Conversely, if two firms merged and the analyst's objective was to assess which systems to keep, the analyst would concentrate on the technical and functional quality of the various software applications.

**Portfolio quadrant chart**

*By judging application systems on technical quality, functional quality and strategic value, companies can assess their software investment*




Source: Nolan, Inc. CW Chart: Janell Genovese

• **The cross-system view.** The cross-system view recommends which applications should be optimized. This view allows the ranking of applications on the basis of costs, ability to meet business requirements and technical quality in order to identify trends and target opportunities for improvement.

For example, in the cross-system view, IS can compare the maintenance costs of an application with high technical quality against the maintenance costs of an application with low technical quality. Such a comparison helps identify the costs associated with declining technical quality as well as the potential for cost reduction made possible by improving the quality of the second application.

This analysis supports the requirements of senior managers who need a global view encompassing many applications.

• **The application view.** The application view recommends the specific optimization course for each application and provides the detailed analysis of each application. It examines budget, staffing, technical platforms and maintenance backlogs in addition to identifying the specific factors affecting the application's quality.

This view is analogous to the individual research reports produced by investment firms on the companies they analyze in that there is a detailed report for each application. The report enables IS and business managers to identify needs and opportunities for improvement within the application.

For example, one company had a purchasing system that was difficult and expensive to maintain, in part because of frequent failures in its nightly batch processing.

The analysis showed that an investment in strengthening the validity checking within the application's on-line portion would lower costs and reduce failures by eliminating the invalid data that caused the batch failures. In addition, desired data entry changes would be added as part of the process.

Although there are many individual factors used in the analysis of application software, these factors can be grouped into three categories: technical quality, functional quality and strategic value. The improvement requirements of a particular application system can be determined by analyzing its technical and functional

*Continued on page 80*

# How to perform your own portfolio analysis

*Here's what the process entails if you choose not to hire an outside consulting firm to do the analysis for you*

Want to know the ins and outs of the software portfolio analysis process?

It entails the following aspects:

**▶Frequency.**
Ideally, a portfolio analysis should be performed yearly as part of the planning and budgeting process. This allows progress to be measured against the previous year's analysis.

**▶Time and effort.**
The effort required is directly proportional to the number of applications analyzed, the level of detail gathered and the number of individuals involved in the analysis. The setup process is time-consuming, but only for the first analysis.

A typical analysis of five average application systems would take two experienced individuals approximately four to six weeks. Information systems individuals will need to interview business unit managers, but this involvement will be limited to only a few hours each.

**▶Setup.**
■ Identify objectives. Why is this analysis being performed? What is the data going to be used for? Think in broad terms: Too much data is better than too little.
■ Identify applications to be measured. Doing all of the applications in a large IS group may be too big a project to attempt the first time. Select a group of related applications, try the portfolio management approach, modify it, then roll it out throughout the firm.
■ Develop questionnaires. The goal is to collect from business unit managers the information that is necessary to determine applications' functional quality and strategic value. Does the system perform the business function for which it was designed? Is it reliable? What would improve its value?

Break the questions into small, specific parts for easy analysis. Avoid large, open-ended questions such as, "What would you do to improve this system?" These questionnaires can be reused.
■ Identify business-area contacts. Pick one or two business-area managers as contacts for information on each application system analyzed. Ideally, these contacts should be a level above the individuals directly responsible for the system because they will be more objective.

**▶Information gathering.**
Typical information sources include the following:
■ Metrics analysis. Gather technical quality information by measuring the application's source code. Tools are available to rate the quality and maintainability of the code using a variety of software metrics that measure, among other things, complexity and degree of structure. Develop averages for comparing applications, and use the detailed reports for developing improvement plans.
■ Business contact interviews. Send questionnaires to the business contacts in advance to allow them time to prepare their answers. Follow up with an interview to ensure that the answers are complete and that all relevant information about a particular application has been collected.
■ Maintenance records. Information on the frequency with which an application is modified can be obtained from change requests or by looking at the check-in records produced by a library management utility. How are failure rates tracked? What is the backlog for modification requests? Wherever possible, get actual cost figures.
■ Staffing and budgeting. Find out the budget for each system. How many programmers are on the staff? Where do they spend their time? How much is spent on data processing costs? These figures will be used to develop cost/benefits for improvement projects.

**▶Data organization.**
The reams of data collected in the previous step now have to be organized. It is important to put the data for each application into an "apples-to-apples" format so that the applications can be objectively compared. If you calculate the cost of failures one way for one of the applications, calculate it the same way for all of the applications. Charts, graphs and tables are effective ways to communicate the gathered data. Trends and correlations will become visually apparent when you compare application systems in a chart format.

**▶Data analysis.**
Examine the data carefully to look for trends. For example, do the failure rates for the applications correlate to the rate of modifications? If so, how could that be controlled? Which applications are the most expensive to maintain? Why?

Identify improvement opportunities. How should the company proceed with its improvement efforts? Where should money be spent? Which applications should be replaced or phased out? Which are candidates for re-engineering or other improvement activities?

Develop goals. If this analysis were to be repeated in the next year, where should the applications be at that time? Analyze the data carefully and prepare detailed cost/benefit analysis to back up the decisions.

**▶Preparing the report.**
The report should contain the major points discovered in the analysis process: high-level comparison of the applications, an analysis of the strengths and weaknesses of the individual applications, a ranking of improvement projects and a set of goals for the coming year.

The typical five- to 10-page company analysis reports provided by the major brokerage houses is an ideal format for an individual application view. This analysis should be useful to nontechnical management as well as IS managers.

Avoid unnecessary technical terminology; use dollars wherever possible. The idea is to use this report to make investment decisions about applications. Use the charts and graphs prepared.

IAN S. HAYES

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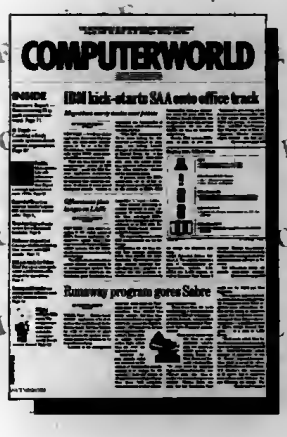
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**COMPUTERWORLD**

The newspaper for information systems management

*Continued from page 78*

ratings. The strategic value determines the importance of addressing those requirements.

Primarily gathered from the IS staff, the technical quality rating compares systems by their maintainability, reliability and technology effectiveness. An application's technical quality is determined by a combination of software metrics, which apply industry standards to the measurement of application programs, and maintenance records, which reveal how frequently a system fails, how long it takes to correct these failures and how long it takes to implement functional improvements to the system.

Functional quality measures the application's effectiveness at addressing the company's business needs. It is derived from surveys of the business unit managers who depend on the services provided by the system. These surveys consist of standard questionnaires followed by interviews that reveal the managers' requirements and the system's conformance to those requirements.

This analysis determines an application's specific strengths and weaknesses by breaking functional quality into subcomponents. These subcomponents consist of the system's usefulness, ease of use, reliability and responsiveness to changing business needs.

Strategic value assesses the importance of each application to the corporation. It is determined by surveying business unit managers on two factors: the importance of the application's business function to the corporation and the dependence on the particular application system for providing that function. How long can the company stay in business without the functionality provided by the application? Are there other sources for this information?

For instance, a marketing mailing list system may have high functional value to a firm's sales area, but the information may be available from multiple sources, lowering its overall strategic value.

**Summary of major points**

The portfolio quadrant chart (see page 78) graphically summarizes the major points of a software portfolio analysis. The chart provides a visual comparison of individual applications within a portfolio against one another. It gives senior managers a nontechnical explanation of the state of a company's application portfolio.

The upper right-hand quadrant contains the stars — the systems that are both technically and functionally sound. These are typically new systems that have been developed using structured design methodologies. Ideally, all systems should fall into this quadrant, although it may not be cost-effective to improve each application to this extent.

The lower right-hand quadrant contains the workhorses — the oldest and most strategic applications. Typically, these applications were the first to be automated when computers were very expensive. By necessity, they were the systems with the highest payback and have generally formed the backbone of the company's operations. They have been highly tailored over the years to meet the specific requirements of a company's business, which explains their high functional rating.

This category often contains financial systems such as payroll and billing. Billing systems in particular tend to be very highly customized to meet the unique requirements of a given firm and are modified on a frequent basis to account for sales promotions, among other requirements.

However, the large number of modifications may lower technical quality. This low quality results in high maintenance costs. For these systems to become stars, the technical quality must be improved. In severe cases, this may require rewriting part or all of the system. However, code improvement technologies such as restructuring and data name rationalization are generally effective for improving technical quality and decreasing maintenance costs.

The upper left-hand quadrant contains the systems that are technically good but are not meeting the needs of users. These are the problem children.

Unfortunately, these systems are not as rare as one would hope. They are generally the result of having been developed with little involvement from the company's business managers. Major functional enhancements are necessary to make these systems fulfill the company's business needs.

A detailed evaluation of available functionality and an analysis of the effort required to add needed functionality would determine whether it is cost-effective to implement these enhancements or replace the system altogether.

The lower left-hand quadrant generally contains the end-of-life or near-end-of-life systems. They no longer serve the business purpose for which they were designed. Moreover, these systems are costly and difficult to maintain. The systems in this category may have become obsolete because of hardware advances or changes within the business they are supporting.

There are a number of options for these systems: They may be re-engineered to preserve whatever functionality is left; replaced if their technical and functional quality has degraded so that they are no longer supporting the business; or discarded.

A portfolio analysis should be done before any major expenditures are made on a system. It is a necessary step before making any rewrite or replacement decisions. Ideally, the system assessment process should be performed yearly as part of the planning and budgeting process. Progress can then be measured against the previous year's baseline and goals.

Software portfolio analysis is a tool to help IS managers maximize their investments in their application systems. It uses business standards to objectively measure systems. This business approach allows the portfolio analysis to be understood and used by all levels of technical and corporate management. ●

## The documents are different, but the principles are the same

When investing in a firm, securities analysts use many documents to evaluate the quality of a possible business investment. IS departments should carefully prepare their own documents when determining what to do with their applications. Here's the data securities analysts use and the comparable documents in the IS world:

▶ **10K report = Software portfolio analysis.** This complete Securities and Exchange Commission filing contains a company's annual report, all supporting details and all necessary disclosures, such as the locations of any property the company owns. The complete software portfolio analysis containing the cross-system view along with the supporting application system views is equivalent to the 10K report.

▶ **Annual report = Cross-system view.** This is the summary of the information in the 10K report sent to the holders of common stock and other interested parties. This is equivalent to the cross-system view in which applications are ranked on the basis of cost, ability to meet business requirements and technical quality to identify trends and pinpoint improvements.

▶ **Letter to the stockholders = Executive summary.** This is the short summary of the company's performance over the previous year and its goals for the upcoming year. In terms of software applications, an executive summary of the software portfolio analysis findings fulfills the same purpose.

▶ **Securities analyst reports = Application view.** These are yearly reports that securities analysts produce for investors interested in analyzing a company's investment quality. The reports delve into the company's performance, market, assets and opportunity for growth. The detailed evaluation of a software application contained in the application view fulfills the same objective. It evaluates technical quality (value of the assets), functional quality (market perception) and strategic value (opportunity for growth).

▶ **Company updates = Application updates.** These are small, one- to two-page event reports produced by securities analysts to keep investors up to date on a particular company. They discuss significant events (such as entering a new market) that occur during the intervals between the securities reports described above. Similar summary reports can be produced for significant events within the life of a software application.

▶ **Market segment analysis = Strategic application analysis.** These reports analyze a particular market segment, such as the life insurance industry, to analyze its potential for growth and profitability over the subsequent years. It is equivalent to the strategic analysis of a software application's value to the firm.

▶ **Consumer market survey = Functional quality survey.** This is a survey of the consumers of the products produced by a company. It analyzes a product's ability to meet the demands of its target market. The survey of functional quality is the equivalent in application terms. It questions the business users of the systems about the system's ability to meet their requirements.

IAN S. HAYES

## Taking stock

### *Software portfolios can act as management tool*

As a management tool, software portfolio analysis delivers the following benefits:

• **It targets scarce resources.** Given limited IS resources and budgets, a software portfolio analysis is a visual indicator of where resources should best be applied. If a manager has enough money to develop two systems during the coming year, which system will have the fastest payback? If the requirement is to reduce costs, which systems can be tweaked, cut back or discarded to achieve that objective?

• **It develops specific action plans.** A major advantage of the portfolio analysis is that it clarifies the specific actions necessary to maximize the value of a given application. The detailed information in the report enables the firm to develop goals and action plans across systems or within an application.

• **It identifies alternatives.** Even in the examination of troubled companies, investors may still find opportunities for gain. Repositioning a company's products or putting money into factory improvements to reduce costs may result in a profitable company.

Software portfolio analysis helps identify possibilities within older systems. Traditionally, these system were replaced at a high cost, but portfolio analysis helps to evaluate whether all or part of the system can be reused. Improving the technical quality of an old system by adding new functionality may produce a "new" system for a smaller investment than rewriting it.

• **It establishes a baseline for measuring progress.** Once an initial portfolio analysis establishes a baseline, systems may be tracked over time. Periodic snapshots can be taken at six-month or yearly intervals for comparison, enabling companies to see both positive and negative trends. For example, one large oil company uses quarterly assessments of technical quality to track the progress of its quality improvement efforts.

This approach will also enable quantification of the progress made in any improvement efforts so management can capitalize on successes or avoid repeating failures. Have maintenance costs decreased? Has user satisfaction improved? Have backlogs increased or decreased?

• **It creates standards.** Quantitative and qualitative system comparisons give insight into which application characteristics are beneficial and which are harmful. For instance, is there a maintenance cost differential between high and low technical quality applications? Are applications that were developed with computer-aided software engineering technology demonstrably better than other applications?

IAN S. HAYES

NATIONAL
# BRIEFS

### Grand opening

▶ **Open Systems Solutions, Inc. — Fujitsu Ltd.**'s wholly owned, Unix-devoted research and development subsidiary — is up and running in Emeryville, Calif., as of late last month. The Japanese giant has put an initial $2.3 million and 27 employees at the subsidiary's service. By the end of the year, the fledgling firm expects to be generating $2.6 million in sales, according to a company spokesman. Under the stewardship of **Takesi Maruyama**, the Fujitsu board member and open systems general manager named to head the new firm, Open Systems Solutions is projecting, among other things, a doubled sales force, some $7.4 million in revenue and a barrage of Unix-based applications by 1995.

### Corporate crash

▶ The collapse of joint manufacturing discussions with firms in Taiwan and Korea last month reportedly ended **Rodime PLC**'a hopes for corporate survival. The Scottish disk drive pioneer, faced with the prospect of a seventh consecutive year in the red, is liquidating operations in Scotland and Singapore and has filed for Chapter 11 protection for **Rodime, Inc.**, its U.S.-based operation. Rodime is reportedly seeking a buyer for the manufacturing rights to two advanced disk drives. Rodime will continue to develop the disk drives until such a buyer materializes.

### Identity crisis

▶ **Rodime Systems, Inc.**, in Boca Raton, Fla., immediately moved to notify its customers that, unlike similarly named **Rodime, Inc.**, it is still in business. The former retail products division of the now-bankrupt disk drive firm, Rodime Systems is now a wholly owned subsidiary of technology products development firm Profit Technology, Inc.

### Jobs jettisoned

▶ Strapped for funds and staggered by rapidly changing product demand, Longmont, Colo.-based disk drive pioneer **Prairietek Corp.** late last month suspended operations at its Longmont and Singapore facilities. The move eliminated 100 jobs in Colorado and twice that number in Singapore, according to the company.

# Change no stranger to revamped Cognos

BY MARYFRAN JOHNSON
CW STAFF

OTTAWA — Three times a year, the research and development managers at Cognos, Inc. sit face to face with 19 information systems executives from their largest customer sites.

Hailing from such corporations as Proctor & Gamble Co., these users come with a laundry list of suggested changes and enhancements for Cognos' Powerhouse software development tools.

Ballots are cast, and the changes start rolling forth.

"These customers have an absolute, direct line to our R&D," said Jeffrey Papows, Cognos' president and chief operating officer. "Once you start doing something like this, you are really on the hook."

This is the kind of hook that Cognos prefers, however.

In 1989-1990, the company was a floundering isolated tools vendor with one solid product to its name, Powerhouse 4GL, and a string of losing quarters dragging it toward obscurity.

So Michael Potter, chairman and founder of the $141 million firm, set a corporate restructuring in motion. Potter brought in two Cullinet Software, Inc. veterans — Papows and R&D head Ron Zambonini — and trimmed the work force by 16%. Crucial sales and marketing operations were relocated to Burlington, Mass., to pump up the company's profile in the U.S.

"Cognos has always been fairly invisible, especially with its single headquarters in Ottawa," Papows said.

"In the last two years, we deliberately set out to change that," he added.

Seth Resnick

**Cognos' Papows** *is making big changes at the firm, with the goal of greater visibility and revenue*

With earnings doubling each quarter of fiscal 1991, stock jumping 300%, and product releases quadrupling in the past two years, change has been a constant companion of the Cognos crowd. Increasing sales and productivity plus a public stock offering during the past year raised the company's cash holdings from $2 million to $34 million.

The greatest change stemmed from three sources: a dramatic expansion of the product line, a revitalized approach to generating sales leads and greater diversification for distribution channels.

Papows galvanized Cognos' sluggish field organization by replacing 11 of the 22 sales managers, mainly with hotshots lured from big database companies such as Oracle Corp. and Ingres Corp. (now a part of Ask Com-

*Continued on page 82*

## Cognos at a glance

**The company:** Cognos, the largest software company in Canada, sells an integrated set of business applications development tools for midrange and personal computers.
**Dual headquarters:** Ottawa and Burlington, Mass.
**Employees:** 1,100 worldwide.
**Revenue:** $141 million in fiscal 1991.
**Products:** Flagship product is Powerhouse 4GL, which runs on four midrange platforms from Digital Equipment Corp., IBM, Hewlett-Packard Co. and Data General Corp. Also has versions for MS-DOS and OS/2-based PCs. An Apple Computer, Inc. Macintosh version is in beta testing now, as is a version for IBM's Unix-based RISC System/6000. Added during the past year: a graphical interface for Powerhouse, end-user reporting tools for terminals and PCs, a computer-aided software engineering tool for analysis and design and versions of Powerhouse for the AS/400 and three Unix platforms.
**Installed base:** Nearly 20,000 sites.
**Competitors:** Database vendors Oracle, Ingres and Sybase, Inc. and 4GL vendors Information Builders, Inc. and Smartstar Corp.

# Bull forms systems integration unit

BY SALLY CUSACK
CW STAFF

BILLERICA, Mass. - Bull HN Information Systems, Inc. has officially tossed its hat into the integration and consulting ring.

The newly formed systems integration unit will focus on large-systems users within Bull's installed base and users outside Bull in health care, insurance and government. The latter group will include IBM mainframe shops and particularly CICS/VSAM users, said Steve Gardner, the unit's president.

Peter S. Kastner, an analyst at Aberdeen Group, a Boston-based market research and consulting firm, said that going after the CICS/VSAM market is not as outrageously ambitious as it may initially sound.

Referring to CICS/VSAM users as the "bread and butter" of the IBM mainframe world, Kastner pointed out that it is also the most vulnerable to the lower costs of downsizing strategies, due in part to the costliness of migrating to DB2.

Bull's open systems strategy is broader than IBM's, Kastner said. He noted that the Bull product line encompasses technology from Intel Corp. 80386-based desktop personal computers through Motorola, Inc.-based multiprocessing systems all the way to reduced instruction set computing (RISC) machines.

According to Gardner, the highly autonomous unit will start with between 50 and 60 employees. Beyond the Bull installed base, the geographic focus will be narrow — the northeast corrider from Philadelphia to Boston, parts of the Southwest and parts of Canada.

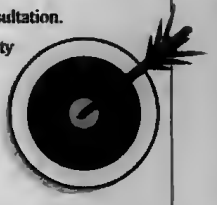
The markets were selected based on analysis of high-growth integrators already in place. Bull said it plans to subcontract to systems integrators as well as third-party vendors.

Kastner said Bull has a reasonable opportunity to grow this service aggressively. "The need for systems integration is so great, I don't see it changing significantly over the next five years," he said. "There are enormous changes ahead for IS, and outside help is often recommended."

## In the bull's-eye

Bull targets five techoology strategies for its new systems integration unit:

- Offloading mainframe applications to RISC platforms using Bull-developed CICS/VSAM movement products.
- Providing PC LAN integration to enterprise-class customer sites.
- Providing imaging tool sets and consultation.
- Providing physical and logical security access across and within LANs and environments.
- Helping users build client/server portions of applications on workstations, PCs and LANs.



# Software aids contract writing

BY MITCH BETTS
CW STAFF

Companies in the computer industry spend a small fortune having lawyers draft contracts such as software licensing agreements. But now there is a software package available that can sharply reduce the amount of time the legal meter is running.

The $350 document-assembly package, called Quickform Contracts and issued by Annandale, Va.-based Invisible Hand Software, lets a computer firm's business manager draft a near-custom legal agreement that can then be fine-tuned with the help of legal counsel. It runs on IBM-compatible microcomputers.

The user answers a series of questions about the proposed agreement and, based on the answers, the program assembles the document from a library of hundreds of applicable contract clauses.

Further customization is possible by transferring the document to a word processing program.

"Quickform fills the gap in the computer industry between ill-fitting form contracts and one-of-a-kind agreements prepared by slow, expensive draftsmen," said John A. Newman, owner of Invisible Hand. The product was designed by Newman, a computer lawyer, and programmer Tom Mielke.

In addition to software licensing agreements, the Quickform package covers systems integration contracts, confidentiality agreements and agreements for teams of vendors bidding on computer contracts.

Cleveland Thornton, an attorney in Fairfax, Va., said one of his high-technology clients uses the software to draft software and teaming agreements for air-traffic-control systems. Thornton then reviews the contract. But instead of reading all 20 pages, he scans the Quickform summary of how the client dealt with the standard issues and then focuses his expertise on any unique matters that need special attention.

"I can apply my time and the client's money to things that are more productive for him," Thornton said.

Furthermore, he said, the program prevents the user from forgetting to include key clauses such as the warranty provision. "Even lawyers forget to put stuff in," he observed.

Ronald J. Palenski, general counsel for computer software and services industry association Adapso, called the package "one of the slickest ideas yet." He said he has recommended it to small vendors looking for legal help.

Palenski noted that the program warns the user about tricky areas in the law. For example, if the vendor opts for a software warranty period of 30 days, the program cautions that 30 days may not be sufficient under the Uniform Commercial Code.

# Mergers down in first half, increase in second

BY NELL MARGOLIS
CW STAFF

Merger and acquisition investment banker Broadview Associates ran smack up against the limits of statistics when it issued its semiannual information technology industry deal-making report late last month.

The raw numbers showed computer firm merger and acquisition activity in the first six months of 1991 down 24% from the comparable 1990 period. However, Broadview principal Paul Deninger cautioned, this is not the sign of decline that it appears to be.

"The drop in the number of deals on a year-to-year basis," he said, "is attributed in part to the fact that we were measuring against a period — the first half of 1990 — that was the all-time high in terms of the number of information technology transactions."

In addition, Deninger pointed out, Broadview's data showed computer company combination in the first half of this year increased 7% over that in the immediately preceding six months.

Moreover, the Broadview report was issued amid a mini-blizzard of software sector deals.

On Aug. 12, computer-aided software engineering (CASE) player Knowledgeware, Inc. bought Language Technology, Inc., maker of CASE tools for maintaining existing Cobol systems; CASE tools vendor Integrated Systems, Inc. merged with real-time operating systems firm Software Components Group, Inc.; Augat, Inc., which targets interconnection products to the automotive and communications industries, agreed to acquire automotive wiring harness manufacturer National Industries, Inc.

On Aug. 13, Apple Computer, Inc. Macintosh-to-IBM connectivity companies Avatar Corp. and Tri-Data Systems, Inc. merged; IBM- and Apple-compatible software vendor Symantec Corp. bought cross-platform C++ compiler maker Zortech, Inc.

On Aug. 19, Unitronix Corp. and Effective Management Systems, Inc., purveyors of software for the Digital Equipment Corp. VAX platform, merged.

On Aug. 20, picking up its second company in a week, Symantec bought remote control communication products vendor Dynamic Microprocessor Associates, Inc.

The ongoing restructuring of the computer industry, many analysts recently noted [CW, July 22], is likely to keep the pace of corporate reassortments at whirlwind level well into the coming year.

"Nothing signals this changing technological landscape better than the fact that AT&T was a buyer in the largest information technology transaction so far this year — the merger with NCR — and a seller in the second largest hardware deal: its sale of its minority stake in Sun Microsystems," Broadview principal Christopher Schember noted.

"We're seeing an incredible uptick in activity," Deninger said. "On the average, we do 50 deals a year. In July alone, we did seven."

## INTERNATIONAL BRIEFS

### All systems go

▶ **IBM** is getting ready to roll out a Polish subsidiary later this year. Recruitment efforts are currently under way to attract a local staff for **IBM Poland**, which will be headquartered in Warsaw with three branch offices in locations yet to be decided, an IBM spokesman said late last month.

### Selling off

▶ Canadian telecommunications equipment maker **Northern Telecom, Inc.** is planning to sell its 20% stake in UK-based **International Computers Ltd. (ICL)**, according to a recent report in the British financial press. Northern Telecom acquired the ICL holding as part of its purchase of British Telecom supplier STC PLC earlier this year. According to Michael Arreola, an analyst at market research firm Northern Business Information, ICL parent **Fujitsu Ltd.** would probably prefer a European buyer, so as not to threaten ICL's involvement in the Pan-European Esprit computer project.

### Round 2

▶ The second round of activities aimed at integrating Germany's **Siemens-Nixdorf Informationssysteme** — formed when Siemens AG acquired Nixdorf Computer AG 11 months ago — has begun with the cutting of 3,000 jobs worldwide and the closing of the firm's Berlin-based personal computer and cash register systems factory. The measures are aimed at saving the company some $329 million.

# Cognos

FROM PAGE 81

puter Systems, Inc.) He set up new lead-generating methods that increased the number of "qualified" customer leads from 100 a month to more than 1,200 a month.

The company recently rewarded its top-performing salesman with a new red Porsche. "He made more money than I did last year," Papows said.

"The challenge for Cognos is not technology. It's marketing," said Leland Freeman, a consulting editor at the Marblehead, Mass.-based "James Martin Report," which specializes in software technologies.

So far, the effort to get the message out appears to be working. "Their salespeople have the approach I like," said Ken Krallman, IS director at Carleton Technologies, Inc. in Orchard Park, N.Y. The aerospace manufacturer is in the process of evaluating Powerhouse for the VAX and is especially keen on the recently announced client/server version. "They aren't in here forcing anything down my throat, like some software vendors do," Krallman said. "They're willing to bring it in, install it and let us take a shot."

Robert Egan, director of IS at British Columbia Lottery Corp. in Kamloops, British Columbia, is launching a major Powerhouse-developed order processing application this month.

This year, Cognos will be releasing 41 products and enhancements, compared with 25 last year and six the year before.

The company's expanded product line has grown well beyond the fourth-generation language environment, Freeman pointed out. "Their products really have the capability to take developers through analysis, design, prototyping, construction and maintenance of applications," he noted.

One of Cognos' largest customers is Dominion Textile, Inc. in Montreal, a multivendor $1.4 billion company that served as a beta-test site for Powerhouse on IBM's midrange Application System/400.

"Cognos is very technically sound. They know their stuff," said Ronald Losier, applications development manager at Dominion. Although the firm is still wrestling with "major performance problems" in the first AS/400 version of Powerhouse, Losier said his company is confident Cognos and IBM will iron out the bumps in the new release, due out next month.

Industry analysts said corporate interest in applications development software is clearly increasing. "Cognos, with its size, excellent technology and customer base, stands as a primary beneficiary" of this trend, said Paul Bloom, an analyst at Volpe, Welty & Co. in San Francisco.

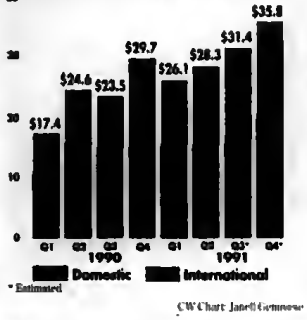
In a survey conducted by The Yankee Group, Fortune 1,000 IS managers identified their most critical needs for the next several years as applications development tools and enterprisewide integration of departmental and desktop systems.

With its sprawling presence in the proprietary midrange, Cognos has already been reaping the benefits of the mainframe-to-midrange downsizing trend. Company executives are also gearing up for the major shift to desktop computing, and three Unix-based versions of Cognos product lines are already on the market.

That shift will account for 25% of Cognos' revenue by 1993, Potter said. "It is our intent, by the mid-1990s, to sit astride the desktop and the midrange server in equal balance."

### Quickstep

*New blood in its executive, sales and product areas is pumping up growth at Cognos*




CW Chart: Janell Genovese

# Do not assume that training is a given

BY SCOTT KRAMER
SPECIAL TO CW

With tight times, training budgets are being slashed at many companies. If you're looking for a job, this isn't exactly the kind of news you'll want to hear, since training opportunities are an important consideration for job seekers interested in maintaining their skills and advancing their careers.

In the current climate, an absence of training programs may not be a sufficient reason to turn down a job, but it is at least important enough that you should ask questions before the fact.

Here's how you can find out before you take the job whether your prospective employer's information systems department has cut back on training and education benefits:

• **Ask for specifics — financial and otherwise — on the company's commitment to technical training.** Applicants would be wise to ask what the training budget is and who budgets it, says Diane Coleman, director of MIS at Fleetguard, Inc. in Nashville. "At Fleetguard, IS has their own budget, which they control," she says.

This kind of information can reveal how the firm views its IS department. If the company allocates a good share of money to the IS budget, that's a good sign the IS department is fairly independent, she explains.

Joe Vincent, director of technology planning at Humana, Inc. in Louisville, Ky., suggests that applicants find out how many hours of professional in-house training the company provides per year.

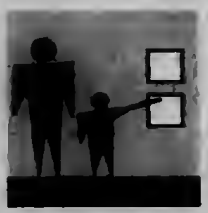
• **Find out which areas of training have been trimmed and what the IS department is doing to supplement those that have been cut back.** Many firms have put a moratorium on off-sight training because of the travel costs, but some companies are working around this sort of cutback by conducting more courses in-house.

"We're now offering more internal courses, which allow us to reduce the overall cost of training but provide the same amount of education," says Thomas Loane, vice president of computers and communications at Alamo Rent A Car, Inc. in Fort Lauderdale, Fla.

Another approach companies can take is to tap local resources.

"We send people to the local community college," which costs less then sending people to off-site training courses, says Frank Nestor, director of IS at Summitt Consulting in Lakeland, Fla.

• **Negotiate training as part of your hiring package.** Negotiating training is a good idea because it's one way to ensure that IS professionals will get the training they want, says Bill Murray, director of IS at Tribune Broadcasting Co. in Chicago.



When applicants are offered a position, they should then find out whether they have to pay for training out of their own pockets, says Edwin Ecker, director of computer facilities at MacMurray College in Jacksonville, Ill. If they do, they should make sure their salaries compensate for that, Ecker adds.

• **Discuss policies on format education.** Often, applicants will assume that companies offer tuition reimbursement to all employees for work-related courses. But during cutbacks, professionals shouldn't make assumptions.

"It never hurts to ask about policies on education. A company may have provided full education reimbursement in the past, but because of the way the market is now, things might have changed," says Robert Coyle, senior vice president of operations at Sears, Roebuck Acceptance Corp. in Greenville, Del.

Applicants should also ask whether the firm encourages employees to seek higher education, Vincent says.

Tuition reimbursement is particularly important to ask about because it allows professionals to choose a focus, which in turn can direct them to a degree, which can then lead to better opportunities in the future, says Ed Stanley, director of information services at Brookstone Co. in Peterboro, N.H.

• **Find out about opportunities for professional development or nontechnical training.** This is a benefit that shouldn't be underestimated, according to Ronald Blystone, IS director at Harsco Corp. in Camp Hill, Pa.

For example, "We've sent a couple of people to Dale Carnegie, which has supplemented their technical skills," he says.

Professionals may also want to ask whether the company provides or reimburses for courses on interpersonal skills, management improvement and writing skills, says Jeff Mahoney, general accounting and data processing manager at SCM Office Supplies in Marion, Ind.

• **Ask for the chance to speak to other employees in the IS department.** This extra step in the IS interviewing process would benefit everyone because the company also has a lot at stake, says Michael Onufer, data processing director at Radio and Records, Inc. in Los Angeles.

"We go through great pains to paint an accurate picture of the company's pros and cons at the time of the interview. If you mislead the person and they get unhappy and quit, then you're back where you started," he explains.

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Kramer is a free-lance writer based in Irvine, Calif.


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INDUSTRY CURRENTS

# Automakers emphasize service enhancements

BY JULIA KING
SPECIAL TO CW

How can a company turn a profit — or even stay on track — in a market where supply exceeds demand by more than 5 million units per year?

According to automobile manufacturers and importers, there is only one way: deliver outstanding customer service.

To some degree and in some places, this emphasis on customer service is good news for information systems professionals in the automotive industry, particularly if they have strong networking credentials.

"Customer service is at the top of the list for all automakers," says Evan Wride, director of IS at Nissan Motor Corp. USA in Gardena, Calif.

Some companies, including General Motors Corp., say they are continually looking for IS professionals with networking expertise. Managers at other companies note that for those IS professionals already working within the industry, opportunities for advancement are on the rise.

"Because the days of radical growth are behind us, we're trying to challenge the workers we do have," says Kenneth Barile, MIS manager at BMW of North America, Inc. in Woodcliff Lakes, N.J.

Now, for instance, BMW is involved in creating enterprisewide data modeling. Barile says this has translated into more opportunities for people to work on different types of projects, particularly within the development group, where all of BMW's 75 IS staff members work.

Overall, IS managers say, keeping customers satisfied means furnishing thousands of dealers with more and better information about parts, repair procedures and warranties.

All of this enables the retail outlets to provide better service and support — currently the primary source of revenue industrywide.

To this end, most companies have sophisticated relational database technology in place to slice and dice data by dozens of different parameters. Most have also installed satellite-based communications networks, which dealers can tap for technical bulletins, service updates, training programs and whatever other information might be needed to prevent a customer from going away mad — and possibly defecting to the competition.

Maintaining and enhancing these systems requires IS professionals with technical know-how, particularly database and networking expertise.

For example, Nissan links 100 of its dealerships to regional sales offices and distribution centers via a very small-aperture terminal (VSAT)-based satellite network and also employs the Tymnet public network for batch data transmissions. Wride says that anybody he hires must be able to address both of these technologies.

In and of itself, however, bolstered customer service has not produced anything approaching an industrywide increase in job opportunities for IS professionals. Other factors — notably the trend toward downsizing and today's recessionary economic conditions — have in some cases resulted in a decrease in job openings.

At Saab Cars, Inc. in Orange, Conn., for example, IS director Nicholas Ioli says his department has no openings following a recent downsizing process.

If and when there are openings at Saab, Ioli says, he would be looking for people with information transfer experience rather than any specific experience in either voice or data.

Currently, local-area networks tied to Saab's corporate data center via a dial-up network link the company's 350 dealerships nationwide. But eventually, Ioli says, this will be replaced with a VSAT-based network that will be used to transmit data files as well as video training programs, interactive advertising and promotions and design information.

Saab's plans are not unique, Ioli adds. The auto industry is moving toward multimedia communications. For example, most large companies are replacing videotaped training programs with live videoconferencing sessions broadcast over VSAT networks. Similarly, most carmakers are beginning to employ image technology to transmit parts catalogues and service manuals to dealers electronically.

Like large companies in most other industries, automakers are moving from mainframe-based computing environments to client/server architectures. This, in part, explains carmakers' need for IS staff members having LAN and other network expertise, says Clayton Snyder, manager of computing systems at General Motors Research Labs in Warren, Mich.

IS executives at all car companies say they prefer to hire technically proficient people with experience in the automotive industry.

"Since customer satisfaction is the big nut, one of the key differentiators [among job candidates] could be retail automotive experience," Barile says. After all, he notes, these people are uniquely qualified because they have firsthand experience of how dealers operate.

### Wearing two hats

While IS executives' first choice would be to hire computer and networking professionals with frontline automotive industry experience, most realize that the average job candidate is unlikely to possess both technical skills and business experience. To this end, both Nissan and Whittier, Calif.-based Isuzu Motors, Inc. have created dual career paths for IS professionals working at the companies.

At Nissan, Wride says, technical wizards, particularly MVS and database experts, can rise through the ranks to the post of business systems analyst, while more industry-oriented staff members can shoot for positions as managers, in which they would be responsible for identifying dealerships' computing requirements and supervising other workers.

At Isuzu, MIS director Gary Gray says staff can move up the technical track to jobs involving database expertise or pursue management posts that involve client contact.

King is a free-lance technology writer based in Ridley Park, Pa.

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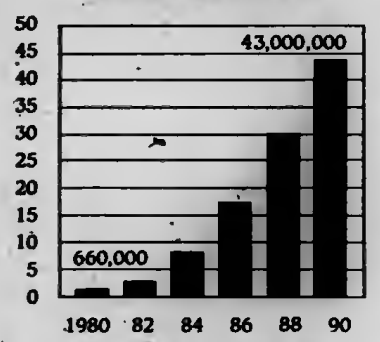


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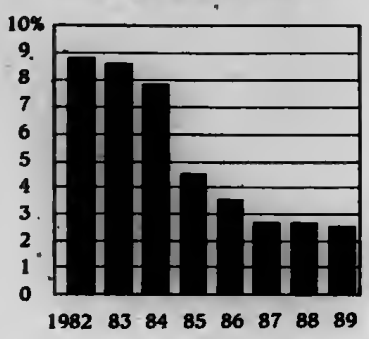


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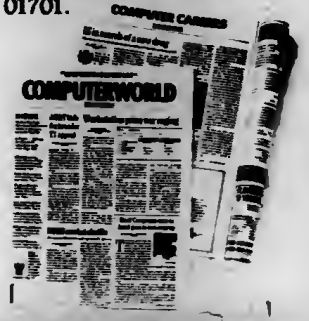


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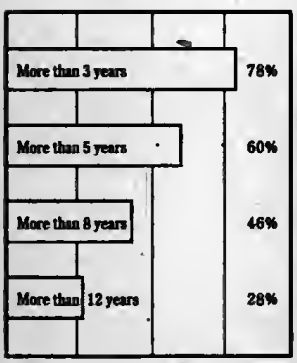


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"Our charter is to recruit experienced computer professionals to fulfill contracts requiring virtually every computer skill, from design through implementation. That includes business analysts, programmers, CASE tool workers, and everyone in between. For every new requirement we get daily, we must find the perfect match. Our *Computerworld* advertisements, having been instrumental in building an internal database of highly specialized professionals, go a long way in helping us make these matches.

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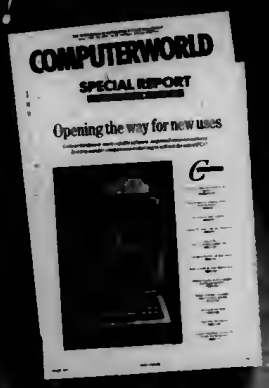


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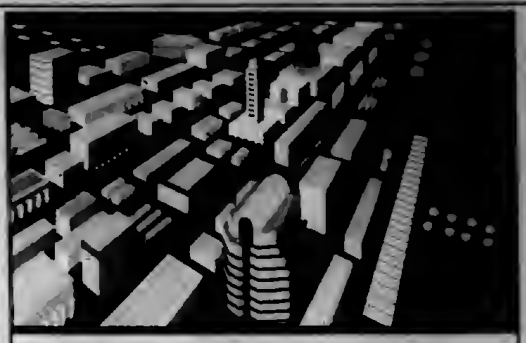

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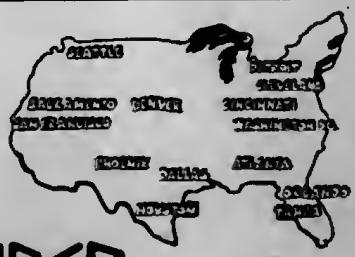

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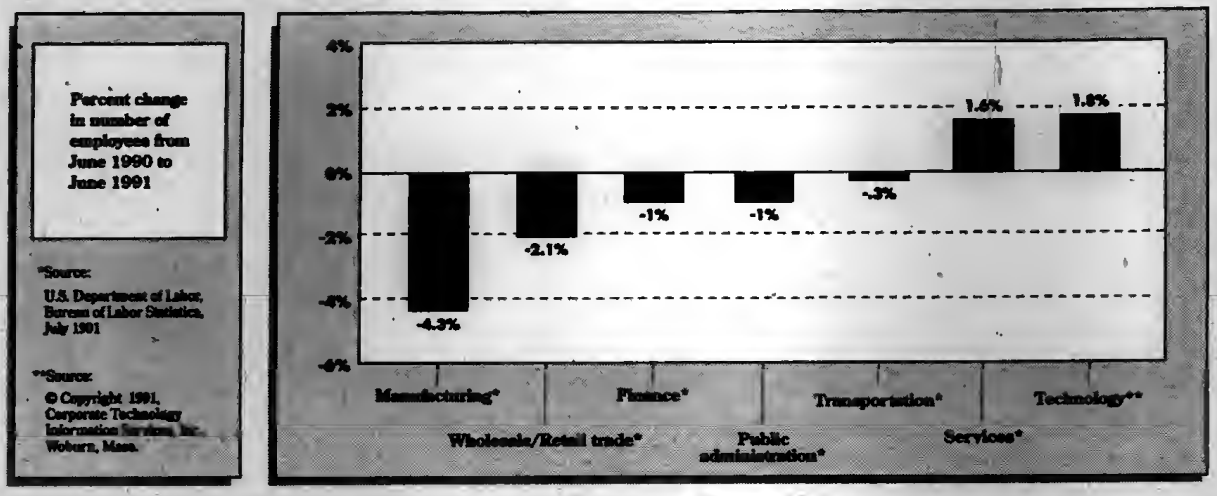



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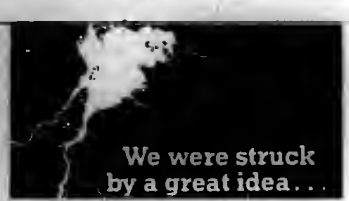


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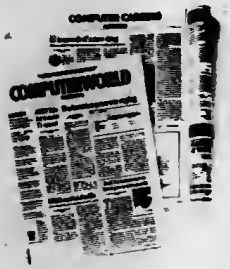


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## Planned Editorial Features:

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- Companies where computer career students want to work. And their top choices for: Information Systems, Engineering, Sales & Marketing, Technical Support, Research & Development.
- Prospects for minorities in computing.
- Merits of an Electrical Engineering degree for a computer career.
- Information Systems salaries from Computerworld's annual survey with the Data Processing Management Association.

# MARKETPLACE

## Servers ease outbound faxes

BY ALAN RADDING
SPECIAL TO CW

You don't have to be an expert to realize there is something inherently inefficient about printing out a document, walking it over to a fax machine and waiting in line to transmit it.

The ideal solution is to fax the document from the workstation the same way in which you would send it to a printer — hit a couple of keys and off it goes.

Fax servers, which combine fax processing and a fax modem, attempt to provide this solution.

Typical fax servers are stand-alone, intelligent devices costing from $2,000 to $10,000. Used in conjunction with a host or a network server, they support multiple users and provide the same controls the host server exercises over other resources such as network printers.

**Fax factors**

Companies are turning to fax servers for the same reasons that they use the network to manage other peripherals:

- A centralized fax server allows better control through prioritizing and queuing.
- Management can track activity through a variety of reports.
- Multiple users can easily share the fax.
- Efficiency improves because the system resends until the transmission is successful.
- Fax servers reduce costs by saving employees time otherwise spent waiting to use conventional fax machines.

Computer Equity Markets, Inc. in Wheeling, Ill., installed a Data Processing Design, Inc. Gold Fax server six months ago to relieve congestion around its fax machines. "It's a lot faster for users if they can send faxes just sitting at their terminals," says Colleen Thoma, vice president/director of MIS. Working in conjunction with the company's Digital Equipment Corp. VAX, the fax server provides services such as queuing and reporting that conventional fax machines and stand-alone fax boards lack.

"We send 300 to 400 faxes a day, and we used to have two people and five fax machines just to send them," says Jim Kelly, director of information services at Substance Abuse Management, Inc. in Milwaukee. By switching to a Gold Fax server for the company's VAX network, Kelly has better control of the faxing and has eliminated the manual operation altogether.

Users find they can quickly justify the cost. "The fax server paid for itself in eight months. We save 10 to 15 minutes over the time it takes for someone to go to the fax machine," says Mark Thayer, data processing manager at Marvin Johnson & Associates in Columbus, Ind.

Thom Sellner, special projects administrator at the *Congressional Quarterly* in Washington, D.C., estimates that in the first two months of operation, a Biscom, Inc. fax server has so far saved 150 hours of employee time based on five minutes per fax for 1,800 faxes.

**The disadvantages**

The downside to fax servers is that they are currently a one-way street: They can send but not receive — at least not easily. "Receiving is the big weakness," reports Judy Pirani, director of image communications systems service at BIS Strategic Decisions in Norwell, Mass.

"We'd like to forward inbound faxes to users' accounts. Now, it's extremely difficult. We'd have to manually scan and forward them," says Ed Hill, systems manager at Call Center Services in Cresskill, N.J., which uses a Wilco Communication Autofax server attached to its VAX.

Unfortunately, a completely satisfying solution isn't in sight. Standards are needed to allow the fax server to identify the incoming fax and route it electronically to the recipient, Pirani explains. Today, the system administrator receives incoming faxes and manually routes them to the recipient. More often, fax receiving is handled by a conventional fax machine.

Radding is a free-lance writer based in Newton, Mass.

### Fax facts

Not every fax server has every feature, so users should shop around. The latest, high-end fax servers come with a variety of features:

- Automatic cover page.
- Support for Adobe Systems, Inc.'a Postscript output language.
- Fax telephone list management.
- Fax broadcasting.
- Queuing and prioritizing.
- Automatic dialing and resending.
- Support for data and forms overlays.
- Fax receiving.
- Detailed activity reporting.

Postscript support lets the system maintain the document's formatting and style. Fax broadcasting and list-management features provide automatic faxing to multiple recipients. Data and forms overlay lets users call up and fill in stored forms.

Marvin Johnson found the data and forms merge capabilities of Biscom's fax server particularly appealing. The company stores a variety of insurance forms and signatures in its Application System/400. The fax server takes the specified form, adds the signature and faxes it. "This is all transparent to the user. They just have to type in the telephone number and specify the form," the firm's Mark Thayer says.

ALAN RADDING


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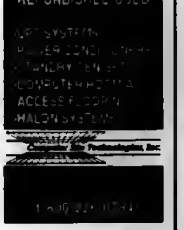


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# INDUSTRY ALMANAC

## PC SOFTWARE

While the hardware sector remains under pressure, software stocks are attractive, according to Cliff Friedman, an analyst at Bear, Stearns & Co. U.S. businesses are spending a bigger piece of their budgets on software than on hardware, he said. On the whole, software stocks will outperform hardware shares in the near term, Friedman predicted. However, investors should be aware of issues in specific corners of the market.

### Litigation: Lotus vs. Borland

Lotus Development Corp.'s copyright infringement suit against Borland International, Inc. will probably not be settled soon. Lotus sued Borland last year over Quattro Pro's alleged infringement of Lotus' copyrighted 1-2-3 menu system. If Borland loses the case, damages could be set on one of two criteria: lost profits to Lotus or undue enhancement to Borland from the infringement. Either way, the likely payment would be less than a $50 million onetime charge and should not concern Borland's investors.

If Borland must remove the Lotus-like menus from Quattro Pro, there will be less impetus for an existing 1-2-3 user to switch.

On the other hand, Quattro Pro is now established as a major spreadsheet, and its own interface is superior to 1-2-3's. That, combined with easy access to the Parabox database and other Borland products — and potentially those of Ashton-Tate Corp. — may mean that Quattro Pro can stand alone without the 1-2-3 menus. Bear, Stearns rated Borland's stock as buy and Lotus' as hold. — *Louis Giglio, Bear, Stearns, Aug. 21, 1991.*

### 1-2-3 splash

Lotus said it will start shipping 1-2-3 for Windows this week. Initial demand will be strong but probably will not match that seen by Windows 3.0, which sold 750,000 units in the first six weeks, or DOS 5.0, which poured into 1 million user hands during its first three weeks on the market.

However, Lotus has an installed base of some 7 million customers that could potentially make the switch. Key to demand will be results of performance comparisons between 1-2-3 for Windows, Microsoft Corp.'s Excel and Borland's Quattro Pro. — *David Readerman, Shearson Lehman Brothers, Inc., Aug. 21, 1991.*

### Desktop publishing sales slow

Based on a telephone survey last month of 57 software sellers from mail-order companies, superstores, distributors and value-added resellers, demand in the desktop publishing sector seems to be weakening.

The slowdown may be due to the new feature-rich word processing packages made for Microsoft's Windows 3.0. Specifically, Microsoft's Word for Windows and Lotus' Amipro are usurping much of the capability of other publishing packages, which may be negatively impacting sales in that sector. The Windows-based programs duplicate many features that low-end desktop publishers offer. Overall, desktop business is lagging behind personal computer unit sales, and many dealers claimed they are selling products at or near cost.

Among those products doing well, Pagemaker from Aldus Corp. — which is currently rated neutral — was the top seller for 34 of the 57 survey respondents. Xerox Corp.'s Ventura Publisher also made a relatively strong showing. — *Alfred Tobia, Mabon Securities Corp., Aug. 20, 1991.*

KIM S. NASH

## STOCK TRADING INDEX

## THIS WEEK'S HIGHLIGHTS

- Semiconductor maker Advanced Micro Devices, Inc. (AMD) brought a $2 billion antitrust suit against Intel Corp. last week. AMD stock advanced ⅜ of a point to close Thursday at 12⅛; Intel also gained, picking up 1¼ points to 51⅛. Texas Instruments, Inc., which agreed to develop high-definition television equipment with three Japanese firms, inched up ½ of a point to 31¾.
- Computer-aided software engineering company Knowledgeware, Inc. said it will take over Intellicorp, Inc. in a $34.1 million stock swap. Knowledgeware surged 2¼ points to 29¾, while Intellicorp added ¼ of a point to 3⅜.
- Among the week's top gainers, Sterling Software, Inc. jumped one point to close Thursday at 14¼. Other software issues also climbed, including Ross Systems, Inc., which rose one point, closing at 11½.
- Elsewhere, peripherals companies Quantum Corp. and Seagate Technology, Inc. each added one point, to 11½ and 10¾, respectively.

# Computerworld Friday Stock Ticker

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| Ariel Communication Corp. | 25.00 |
| Convex Computer | 23.53 |
| Wellfleet | 22.98 |
| Cambex Corp. | 31.74 |
| Intellicorp Inc. | 18.58 |

### TOP PERCENT LOSERS

| | |
|---|---|
| Televideo Systems | -14.39 |
| Archive Corp. | -11.75 |
| Gold Systems Int'l | -10.17 |
| National Semiconductor | -9.09 |
| MIPS Computer Systems | -7.61 |

### TOP DOLLAR GAINERS

| | |
|---|---|
| Symantec Corp. | 5.25 |
| Borland Int'l | 4.75 |
| Cambex Corp. | 3.75 |
| Cray Research Inc. | 3.38 |
| Picturetel Corp. | 3.00 |

### TOP DOLLAR LOSERS

| | |
|---|---|
| Aldus Corp. | -1.75 |
| Gail Computer Corp. | -1.75 |
| Cabletron Systems | -1.63 |
| Gold Systems Int'l | -1.50 |
| Novell Inc. | -1.25 |

| Exch | 52-Week | | Range | Aug 30 Close | Wk Net Change | Wk Pct Change |
|---|---|---|---|---|---|---|
| **Communications and Network Services** | | | | | | Up 2.46 |
| OTC | 10.80 | 5.88 | 3 COM Corp. | 6.38 | 1.13 | 15.92 |
| NYS | 69.75 | 54.25 | American Info Techs Corp. | 61.75 | -0.75 | -1.20 |
| NYS | 40.38 | 25.00 | AT&T | 38.88 | -0.25 | -0.64 |
| OTC | 4.13 | 2.00 | Ariel Communication Corp. | 4.00 | 0.38 | 25.00 |
| NYS | 58.25 | 40.25 | Bell Atlantic Corp. | 49.88 | 0.63 | 1.27 |
| NYS | 58.25 | 46.13 | Bellsouth Corp. | 48.88 | 0.50 | 1.03 |
| NYS | 32.88 | 15.50 | Cabletron Systems | 46.38 | -1.63 | -3.25 |
| OTC | 25.88 | 5.25 | Compression Labs Inc. | 22.75 | 0.13 | 0.55 |
| OTC | 3.13 | 2.44 | Data Switch Corp. | 3.75 | 0.00 | 0.00 |
| NYS | 21.80 | 8.88 | Digital Comm. Assoc. | 12.75 | 0.00 | 0.00 |
| OTC | 25.25 | 12.25 | Dynascan Corp. | 17.00 | -0.13 | -0.73 |
| NYS | 12.38 | 8.00 | Ellemtel Int'l Inc. | 8.75 | -0.25 | -3.57 |
| OTC | 3.75 | 1.75 | Gandalf Technologies Inc. | 3.88 | -0.13 | -4.17 |
| NYS | 3.63 | 1.63 | General Datacomm Inds. | 3.38 | -0.13 | -5.00 |
| NYS | 33.80 | 24.88 | GTE Corp. | 30.00 | 0.38 | 1.27 |
| NYS | 63.00 | 40.38 | ITT Corp. | 59.00 | -0.00 | -0.62 |
| NYS | 34.63 | 17.88 | MCI Communications Corp. | 28.88 | -0.88 | -1.28 |
| OTC | 9.25 | 2.75 | Microcom Inc. | 6.25 | 1.25 | 13.63 |
| NYS | 12.63 | 4.00 | Network Equipment Tech. | 12.63 | 1.50 | 6.82 |
| OTC | 13.25 | 4.00 | Network General | 8.75 | 1.00 | 11.43 |
| OTC | 17.13 | 8.13 | Network Systems Corp. | 16.63 | 0.13 | 0.75 |
| NYS | 40.75 | 22.13 | Northern Telecom Ltd | 36.88 | -0.38 | -0.83 |
| OTC | 69.88 | 17.25 | Novell Inc. | 57.25 | -1.25 | -1.82 |
| NYS | 77.50 | 67.00 | Nynex Corp. | 75.75 | 0.00 | 0.00 |
| NYS | 47.50 | 38.38 | Pacific Telesis Group | 42.88 | -0.25 | -0.88 |
| OTC | 11.63 | 3.63 | Penril Data Comm. Ntwks. | 8.13 | 0.63 | 8.33 |
| OTC | 34.00 | 8.25 | Picturetel Corp. | 34.00 | 3.00 | 9.68 |
| NYS | 18.13 | 8.88 | Scientific Atlanta Inc. | 13.63 | -0.88 | -2.68 |
| NYS | 57.50 | 47.25 | Southwestern Bell Corp. | 55.00 | 0.38 | 0.69 |
| NYS | 31.50 | 30.63 | United Telecom | 26.38 | 0.50 | 1.93 |
| NYS | 40.75 | 32.88 | US West Inc. | 38.50 | 0.38 | 1.04 |
| **Computer Systems** | | | | | | Up 2.94 |
| OTC | 20.75 | 4.50 | Advanced Logic Research | 14.00 | 0.50 | 3.70 |
| ASE | 17.88 | 10.00 | Amdahl Corp | 13.63 | -0.38 | -2.68 |
| OTC | 73.25 | 34.25 | Apple Computer Inc. | 53.00 | 0.00 | 0.00 |
| OTC | 6.13 | 3.50 | Archive Corp | 3.75 | -0.80 | -11.75 |
| OTC | 32.75 | 7.50 | AST Research Inc. | 26.80 | 1.80 | 5.36 |
| NYS | 6.38 | 4.00 | Bolt, Beranek & Newman | 6.75 | -0.13 | -1.82 |
| NYS | 21.63 | 4.63 | Commodore Int'l | 11.25 | 0.25 | 2.27 |
| NYS | 74.25 | 29.88 | Compaq Computer Corp. | 35.13 | -0.25 | -0.71 |
| OTC | 0.13 | 0.13 | Computer Automation Inc. | 1.50 | 0.13 | 9.09 |
| NYS | 14.25 | 8.75 | Control Data Corp. | 9.88 | -0.13 | -1.39 |
| NYS | 18.75 | 6.38 | Convex Computer | 12.13 | 2.50 | 23.53 |
| NYS | 44.80 | 20.00 | Cray Research Inc. | 43.63 | 3.38 | 8.39 |
| NYS | 19.25 | 3.50 | Data General Corp | 10.38 | 3.00 | 11.51 |
| NYS | 3.25 | 0.75 | Datapoint Corp. | 1.38 | 0.00 | 0.00 |
| NYS | 39.63 | 6.88 | Dell Computer Corp. | 32.63 | -1.75 | -5.08 |
| NYS | 63.00 | 49.50 | Digital Equipment Corp. | 63.88 | 2.38 | 3.86 |
| NYS | 39.88 | 13.75 | Harris Corp. | 23.75 | -0.88 | -1.88 |
| NYS | 56.63 | 34.88 | Hewlett Packard Co. | 52.88 | -0.63 | -1.17 |
| NYS | 138.75 | 94.00 | IBM | 97.00 | 3.00 | 3.11 |
| OTC | 37.00 | 7.75 | Information Int'l | 8.75 | 0.75 | 9.33 |
| NYS | 148.00 | 109.00 | Massachsts Electronics | 118.00 | 3.75 | 2.39 |
| OTC | 20.88 | 7.25 | MIPS Computer Systems | 10.63 | -0.88 | -7.61 |
| NYS | 108.50 | 44.50 | NCR Corp. | 109.00 | 0.13 | 0.11 |
| OTC | 26.88 | 10.75 | Pyramid Technology | 17.00 | 1.00 | 6.25 |
| OTC | 34.75 | 7.50 | Sequent Computer Sys. | 8.75 | 0.63 | 7.69 |
| NYS | 47.88 | 16.00 | Silicon Graphics | 41.00 | 1.00 | 2.50 |
| NYS | 40.75 | 14.63 | Stratus Computer Inc. | 39.75 | -0.25 | -0.63 |
| OTC | 37.00 | 15.00 | Sun Microsystems Inc. | 32.25 | 0.75 | 2.27 |
| NYS | 17.63 | 8.88 | Tandem Computers Inc. | 13.63 | 0.88 | 3.09 |
| NYS | 36.50 | 23.38 | Tandy Corp. | 28.75 | 0.88 | 3.14 |
| OTC | 23.25 | 6.75 | Teradata | 22.50 | 2.25 | 11.11 |
| NYS | 8.13 | 3.75 | Ultimate Corp. | 4.00 | 0.13 | 3.23 |
| NYS | 6.88 | 1.75 | Unisys Corp | 5.38 | 0.75 | 14.63 |
| ASE | 6.75 | 2.00 | Wang Labs Inc. (b) | 3.00 | 0.13 | 4.35 |
| **Software & DP Services** | | | | | | Up 3.41 |
| OTC | 63.00 | 17.00 | Adobe Systems Inc. | 50.88 | -1.13 | -2.16 |
| OTC | 12.25 | 3.50 | Ascorp | 3.75 | 0.75 | 15.00 |
| OTC | 69.88 | 21.00 | Aldus Corp. | 39.25 | -1.75 | -4.28 |
| OTC | 32.50 | 12.00 | American Mgmt. Systems | 22.00 | 1.75 | 8.64 |
| OTC | 17.25 | 7.50 | American Software Inc. | 12.25 | -0.25 | -2.00 |
| NYS | 4.63 | 1.38 | Anacomp Inc. | 3.50 | 0.25 | 7.69 |
| OTC | 18.25 | 10.00 | Analysts Int'l | 13.75 | -0.50 | -3.51 |
| OTC | 18.63 | 4.88 | Ashton Tate | 16.50 | 0.38 | 2.33 |
| OTC | 10.25 | 4.50 | ASK Computer Sys. | 8.88 | 0.25 | 3.50 |
| **Semiconductors** | | | | | | Up 2.94 |
| NYS | 14.25 | 3.88 | Advanced Micro Devices | 13.38 | 0.88 | 7.01 |
| NYS | 12.00 | 6.88 | Analog Devices Inc. | 7.75 | -0.13 | -1.59 |
| OTC | 13.50 | 6.25 | Chips & Technologies | 8.88 | 1.13 | 14.52 |
| OTC | 69.25 | 26.00 | Intel Corp. | 49.63 | -0.75 | -1.49 |
| NYS | 12.50 | 8.13 | LSI Logic Corp. | 7.13 | -0.13 | -1.72 |
| NYS | 19.13 | 8.75 | Micron Technology | 14.13 | 0.25 | 1.80 |
| NYS | 72.00 | 40.75 | Motorola Inc. | 68.13 | -0.25 | -0.37 |
| NYS | 8.38 | 3.00 | National Semiconductor | 5.00 | -0.50 | -9.09 |
| NYS | 47.63 | 22.50 | Texas Instruments | 31.63 | 0.25 | 0.80 |
| OTC | 12.25 | 3.00 | VLSI Technology | 7.63 | 0.63 | 9.00 |
| OTC | 18.75 | 4.75 | Wafetek | 9.50 | 1.75 | 22.89 |
| ASE | 8.63 | 3.13 | Western Digital Corp. | 3.50 | -0.25 | -6.67 |
| **Peripherals & Subsystems** | | | | | | Up 1.94 |
| OTC | 3.75 | 0.88 | Apertus Technologies | 1.50 | -0.06 | -4.00 |
| OTC | 16.75 | 7.50 | Bandtec Inc. | 12.25 | -0.50 | -4.00 |
| OTC | 21.00 | 4.25 | Cambex Corp. | 21.00 | 3.75 | 21.74 |
| OTC | 11.75 | 4.25 | Cognitronics Corp. | 9.25 | 0.25 | 2.13 |
| NYS | 31.88 | 14.63 | Conner Peripherals | 22.50 | 0.88 | 4.06 |
| ASE | 14.50 | 7.00 | Datarom Corp. | 13.38 | -0.88 | -6.14 |
| NYS | 13.00 | 4.88 | EMC Corp. | 7.88 | -0.13 | -1.94 |
| NYS | 47.25 | 33.75 | Eastman Kodak Co. | 43.13 | 0.88 | 1.99 |
| OTC | 11.25 | 4.75 | Emulex Corp. | 8.88 | 0.88 | 4.41 |
| OTC | 25.50 | 14.00 | Evans & Sutherland | 17.75 | 0.75 | 4.41 |
| OTC | 6.50 | 3.88 | Iomega Corp. | 5.00 | -0.13 | -2.44 |
| OTC | 38.25 | 8.00 | IPL Systems Inc. | 23.25 | 0.88 | 3.75 |
| OTC | 3.00 | 1.63 | Maxtor Corp. | 3.75 | 0.25 | 7.14 |
| OTC | 18.00 | 4.63 | Micropolis Corp. | 8.00 | 1.00 | 14.29 |
| NYS | 97.63 | 73.50 | 3M Corp. | 88.88 | -0.25 | -0.28 |
| OTC | 10.75 | 6.00 | Peripheral Inc. | 8.75 | -0.50 | -5.70 |
| OTC | 34.75 | 8.50 | Qlogic Inc. | 23.25 | 1.63 | 7.51 |
| OTC | 16.25 | 8.25 | Quantum Corp. | 11.50 | 0.25 | 2.22 |
| NYS | 7.63 | 4.38 | Recognition Equipment | 6.75 | 0.13 | 1.89 |
| OTC | 11.50 | 6.00 | Seagate Inc. | 8.75 | 0.25 | 2.94 |
| OTC | 19.88 | 8.63 | Seagate Technology | 10.13 | 0.63 | 6.58 |
| NYS | 31.38 | 11.00 | Storage Technology | 47.25 | -1.38 | -3.00 |
| OTC | 4.75 | 1.25 | Tandon Corp. | 3.50 | 0.06 | 2.54 |
| NYS | 30.50 | 18.38 | Tektronix Inc. | 30.00 | -0.50 | -1.70 |
| NYS | 0.63 | 0.16 | Telebuyer Systems | 0.88 | -0.09 | -14.28 |
| NYS | 60.13 | 29.00 | Xerox Corp. | 58.63 | -0.63 | -1.06 |
| **Leasing & Services** | | | | | | Off 1.45 |
| OTC | 16.38 | 7.00 | Amplicon Inc. | 14.75 | 0.00 | 0.00 |
| NYS | 39.38 | 14.63 | Comdisco Inc. | 26.25 | -0.38 | -1.39 |
| OTC | 14.63 | 8.88 | LDI Corporation | 12.25 | -0.50 | -3.92 |
| OTC | 4.88 | 3.25 | Telecomm Inc. | 3.25 | 0.00 | 0.00 |

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# Grand design

FROM PAGE 1

"These grand-design procurements have drawn so much attention, and the dollars have become so gigantic that it's become do or die for the agency and for certain segments of the industry. With that kind of pressure, sometimes errors are made," noted Joseph J. Leo, deputy administrator for management at the U.S. Department of Agriculture's Food and Nutrition Service. He had not yet seen the report, but he said new and better ways of doing large projects are needed.

While few would disagree that the government has had too many large projects go sour, not everyone blames the maligned grand design concept. Some federal managers said other factors are more to blame, including regulations that focus on cost rather than value, inflexibility in adapting system requirements and flawed implementations of grand designs. Those managers also cite the economies of scale and benefits of integration that large-scale efforts bring.

The report urges federal information resources managers to broaden their outlooks. "We used to think we could work the technical solution through the organization. Now, [information resources managers] are beginning to look along many dimensions. They need to ask themselves, 'Can we really do this? Do we have the track record? Do we have stability in management?' and so forth," said Francia A. McDonough, assistant commissioner for federal information resources management policy at the GSA and a sponsor of the report. "This is must reading for [government program managers], and it will get attention from the big software developers and system integrators," he said.

Thomas Giammo, assistant commissioner for information systems at the U.S. Patent and Trademark Office, had not seen the new GSA report but said he did not entirely buy the concepts in the earlier report on grand designs.

"You can't meet a large-scale need without a grand design," said Giammo, who is presiding over the huge overhaul of patent and trademark systems in the U.S. "If you think you can do it a yard at a time, more power to you."

Giammo said some people have drawn the wrong conclusions from the 1988 report. In an effort to avoid huge projects, they are now tempted to approach a big effort as a series of shortsighted, disjointed and ultimately counterproductive miniprojects. "What's wrong with the grand design approach is the conceit that you can lay out your requirements ahead of time and then build them. That is manifestly untrue." He said he insists on a rigorous reassessment of requirements throughout a project.

Larry Seidel, an American Management Systems vice president, said the four alternatives were identified in part by looking at the practices of large, private-sector organizations. "Most of them have gravitated toward one of these alternative models and have not gone with the grand design approach."

Seidel said he has seen "a modest trend away" from the grand designs in the federal government, with large projects now split into more phases. "But there is still the strong feeling at many agencies that you still need to do the large procurements to put in place the technology platforms you are going to need."

## Not so grand

The following are four suggested alternatives to the "Grand Design" approach to systems modernization:

- **The bounded grand design.** Focus is on a phased implementation of a comprehensive technical solution with the project's scope carefully bounded to reflect highest priorities and to reduce risk. This approach is most likely to succeed when there is strong technical and managerial talent, a stable environment and an inherent requirement for a tightly integrated comprehensive architecture.
- **Comprehensive information technology utility.** Central information resources management (IRM) acts as a "public utility," providing standards, methodologies and tools on a cost-effective basis. Functional units retain control of data and applications and implement their own modernization programs. The strategy works best when there is a high degree of homogeneity across programs, administrative functions and sites.
- **Functional/technical integration of program-specific plans.** Each functional unit (hardware, software, communications and data) plans its own modernization, and a central IRM group knits the plans together and supplies limited common services such as data centers and networks. This works best when there is a substantial variation across programs or functional units and modest benefits from integration.
- **Incremental investment.** Focus is on getting the highest return from limited resources in a relatively short time. Senior management selects a coordinated portfolio of projects that are implemented on a decentralized basis while senior management monitors and adjusts as needed. It is most appropriate when there is insufficient in-house expertise to support a more comprehensive strategy, few economies of scale, needs for integration and an urgent need for a few specific new systems.

# Computer restores first map of D.C.

BY MITCH BETTS
CW STAFF

WASHINGTON, D.C. — In 1791, the eccentric architect Pierre Charles L'Enfant drafted a plan for the layout of the nation's capital city, a layout that has endured 200 years. But the document was virtually ruined in the 19th century by a misguided effort to "preserve" it with varnish.

Last week, the Library of Congress unveiled a computer-enhanced copy of the L'Enfant plan that eliminates the "background noise" of varnish and dirt to reveal the pencil-drawn street lines as well as corrections penciled in by Thomas Jefferson.

The National Geographic Society and the National Park Service provided financial support for the nation's first computerized map restoration project.

**L'Enfant's map of Washington, D.C., has been restored with the help of computers**

Cartographers at the U.S. Geological Survey in Reston, Va., used a large-format camera to photograph the 29- by 40-in. map and then scanned it into an imaging system from Scitex America Corp. in Bedford, Mass.

The original scanned image occupied 20 computer tapes, or 809M bytes. However, once all of the stains were removed, the digital image could be stored on two computer tapes: one for shading (105M bytes) and one for the map itself (18M bytes).

# GAO finds security lax at U.S. stock exchanges

BY GARY H. ANTHES
CW STAFF

WASHINGTON, D.C. — A government audit of computer security at the top U.S. stock markets turned up 68 security and control weaknesses. The flaws could "impair their ability to maintain continuous service, protect critical computer equipment and operations and process correct information," the U.S. General Accounting Office (GAO) said in a report released last week.

The weaknesses, including such things as a lack of backup systems and combustible materials stored in computer rooms, were found at the New York, American, Philadelphia, Midwest and Pacific Stock Exchanges.

An audit of the National Association of Securities Dealers, Inc. (NASD), which runs the NASDAQ system for over-the-counter stocks, turned up no security flaws, however.

According to the GAO, the six markets handled $1.9 trillion in trades, or 98% of all shares traded in the U.S., in 1990.

Robert P. Campbell, a computer security expert who helped NASD set up its disaster-recovery program, said the exchanges are making progress on matters of computer security but have not gone far enough.

Campbell pointed out that the exchanges were able to switch computer processing to backup facilities when there was a massive power failure a year ago in New York, but they were unable to make trades because their trading floors lacked power.

The GAO did not say which weaknesses were associated with which exchange. Among the problems found were these:

- Two exchanges used telecommunications monitoring equipment that could also be used to alter data.
- At one site, personal computers with floppy disks were attached to a mission-critical system, exposing it to the possible introduction of viruses.
- Four exchanges did not have documented contingency plans for critical systems and trading floor operations.
- Three stock markets had no computer backup facilities, and two did not have alternate power supplies for trading floors.

Some of the exchanges had not seen the report last week and declined to comment on it.

A Pacific Stock Exchange spokesman said most of the problems cited were corrected by a move to new facilities. He said "a couple of findings" were not addressed because "solutions were not cost-effective."

# Gentleman Bandit's career: From systems to stickups

BY CLINTON WILDER
CW STAFF

HOUSTON — It wasn't the devil that made him do it — it was his technical background.

The so-called Gentleman Bandit, who confessed last week to committing 99 holdups in Texas hotels in the past two years, was under financial pressure because his skills in the Honeywell, Inc. computer environment were obsolete, his attorney told *Computerworld*.

Lon Perry, 49, was laid off from Texas Eastern Corp.'s computer operations at the end of 1988.

"He got out on the job market, where companies were mainly using IBM, and his skills were not marketable," attorney Allen G. Isbell said.

Perry told law enforcement authorities that after the layoff and job search, he contemplated suicide, then turned to robbery as a means of financial support. His exploits in robbing hotel guests, reported in the general press last week, earned him the moniker of Gentleman Bandit because of his well-groomed appearance and kindly demeanor.

Perry reportedly called an ambulance for one victim, who suffered a heart attack during the robbery. Perry told police he recorded the names and addresses of victims with the intention of someday paying them back.

Perry was a career information systems employee, having spent 15 years in technical positions in a Honeywell environment at Tenneco, Inc. before joining Texas Eastern in November 1981. He was setting up a microcomputer support group at Texas Eastern when he was laid off at the end of 1988, Isbell said.

# NEWS SHORTS

### Discounts roll with school buses

The Apple USA division of Apple Computer, Inc. last week announced the Macintosh "Right Now Rebate" promotion in hopes of stimulating sales during the peak consumer buying season this fall. The instant rebate — redeemable at the time of purchase from authorized Apple resellers — offers savings of up to $800 on selected computers and printers. It will be in effect from Sept. 1, 1991, through Jan. 5, 1992.

### IBM outsourcing deal put on hold

Awash in red ink and under the eye of federal bank regulators, Southeast Banking Corp. has shelved a 10-year, multimillion-dollar outsourcing deal with IBM. The action freezes what would have been IBM's biggest banking services contract, involving the automation of Southeast's 230 branches.

### BDPA honors MCI

The Black Data Processing Associates (BDPA) named MCI Communications Corp. Corporation of the Year for its support of BDPA-sponsored high school computer competition teams and its telecommunications support at BDPA's recent national conference. The organization also selected William Johnson, a consultant at McDonald-Bradley Corp. in McLean, Va., as its 1991 National Member of the Year.

### SNMP gains management tools

Information systems managers may see more vendors capitalizing on the *management* in Simple Network Management Protocol (SNMP). Last week, two companies, Wellfleet Communications, Inc. and 3Com Corp., said they are designing their products to work with many or all of the SNMP-based management tools. Wellfleet, a Bedford, Mass.-based maker of routers, announced shipment of its Network Configuration Utility software, which enables managers to remotely configure routers. Santa Clara, Calif.-based 3Com said network administrators will be able to manage future versions of its adapter cards from any SNMP-based management tool.

### Visa radio deal fizzles

High start-up costs and other financial static pulled the plug on Digital Radio Networks, Inc., which earlier this year teamed with Visa U.S.A. to launch an on-line, radio-based credit-card authorization service. A spokesman at Visa in San Mateo, Calif., said Digital Radio Networks failed to make the needed modifications to its radio-based network to connect to Visa's existing fiber-optic backbone.

### McCaw and Pactel strike deal

McCaw Cellular Communications, Inc. and Pactel Corp. announced the combination of some of their cellular properties in a 99-year joint venture, with each company holding 50% ownership. The new venture will cover areas servicing 9.5 million people and includes San Francisco, San Jose, Calif., Dallas and Kansas City, Mo., plus certain adjacent cellular properties. Closing of the deal is expected in early 1992.

### Wordperfect offers five-pack

Wordperfect Corp. is offering Wordperfect Office Shell 3.01 as a five-pack, the company announced last week. Shell lets a user build a menu of up to 20 items from programs on a hard drive. The Orem, Utah, company also announced that Office Editor 3.1, a macro and text editor, is now available individually.

### Legent adds tool for SQL

Systems software vendor Legent Corp. last week added a DB2 application development tool to its product line with the purchase of Parity from Paragon Software International. Parity is a tool set and expert system component that allows users to develop SQL code without requiring a high level of programming expertise.

# User doubts cloud Timeplex sell-off

BY JOANIE M. WEXLER
CW STAFF

WOODCLIFF LAKE, N.J. — The original closing date for cash-hungry Unisys Corp. to pass papers on its Timeplex, Inc. networking subsidiary has slipped from Aug. 31 to "sometime in September," according to Unisys.

In the meantime, questions remain about the impact the new joint owners will have on Timeplex's business.

Several Timeplex customers said the firm has offered few details on what to expect under the new ownership, shared by 51% controlling partner Ascom Holding Ltd. in Bern and 49% investor Mercedes Information Technologies, Inc. in Johannesburg, South Africa.

"Timeplex hasn't specifically addressed how the acquisition will affect its product line or us as a customer," said Frank Ferrara, vice president of communications at Midlantic National Bank.

However, Timeplex Executive Vice President James Fiedler was called on at a recent five-member Timeplex Users Network Group meeting to lead an impromptu discussion on the ownership change, said John Faccibene, vice president of telecommunications at New York brokerage firm Garban Ltd.

Faccibene said Fiedler assured users that the $2 billion Ascom would allow Timeplex "the same degree of latitude and autonomy" it enjoyed under Unisys' command. However, Ascom spokesman Victor Schmid said "it is too early to tell" to what degree the new owners will influence Timeplex strategy and product development.

Timeplex President Dewaine Osman has maintained that he does not expect much change but noted, "As the controlling partner, Ascom is now responsible for products, marketing and technical direction."

Schmid said Ascom purchased Timeplex because of its strong presence in the U.S. and Europe. "Ascom wants to internationalize its strong Swiss presence," he explained.

Faccibene said the user group pressed Fiedler on issues surrounding the South African part-ownership and that Fiedler described Mercedes' involvement with Timeplex as "an arm's-length relationship."

"Fiedler indicated that Mercedes understands it isn't going to sell any products in South Africa" because of apartheid issues, Faccibene said, and that the company plans to focus sales efforts in other regions. "We didn't get into product direction, however," he noted.

# CA trail

FROM PAGE 1

acquired over the years, Wang said, in all but five or so cases, the other company approached CA.

Industry analysts said this strategy is consistent with what CA has done throughout its 16-year history, achieving its greatest growth by taking over companies. The 1982 purchase of Capex Corp. and the 1987 Uccel Corp. deal each served to double CA's revenue at those times.

#### Cullinet disaster

Even though CA has bought a few small companies in the past two years, the company's last major acquisition was of Cullinet Software, Inc. in 1989. The Cullinet deal, which analysts said proved difficult for CA to integrate into its corporate culture and structure, capped a three-year buying spree that included the Uccel purchase and the purchase of Applied Data Research, Inc. in 1988.

But now, "the Cullinet disaster is far enough behind them, so they feel they can continue with their growth-by-acquisition strategy," said Charles E. Taylor Jr., a software analyst at Needham & Co. in New York. "They've never abandoned the strategy, just put it on hold for a while. The two-year respite is over."

Wang agreed. "We got beat up pretty badly with Cullinet because the timing of the acquisition destroyed two quarters" of financial results and because of other factors including Cullinet's solid but outdated technology, he said. "So we took a little breather."

Charlotte Walker, an analyst at Lahe, Simpson & Co. in New York, said she thinks CA is in good shape for a second incarnation as an aggressive acquisitor. "They've put their house in order," she said. "They've swallowed Cullinet, and they've brought their disparate product lines together. Now they're in a very strong technological position."

Timothy McCollum, an analyst at Dean Witter Reynolds in New York, said he sees little to cheer about in CA's return as Grand Acquisitor, adding, "I'm disappointed in how they're going about it. Apparently, their strategy is to buy companies with strongly entrenched customer bases but tired product lines.

"I'd much rather see them going after [firms in] some of the fast growth areas, like networking and client/server," he said.

Wang responded: "It's no secret that the mainframe software industry is not growing quickly and that it's a tight market. That's why we're moving into other areas — Unix, VAX, PC." The general CA strategy has been to acquire mainframe software and then use internal development teams to port that software over to other platforms. CA has made a few PC-oriented purchases, including its Compete spreadsheet.

Walker said CA can pursue its growth-by-acquisition strategy "forever, if they manage it right — provided they're able to integrate the product lines and corporate cultures of the companies they buy." But analysts said each acquisition would contribute less to CA's total growth as the company gets bigger.

# No sitting ducks

Computer Associates may be ready for another go at software company hunting, but last week, a flock of firms made it clear that they are not sitting ducks.

"I have no reaction to speculation that we might be involved in talks with CA," said Goal Systems International, Inc. President David C. Wetmore. "If we were part of CA, we would no longer be independent," he said.

Sterling Williams, founder of Dallas-based Sterling Software, Inc., said that if Sterling is one of the firms CA goes after, "that's fine with me; they won't be able to get us."

Will Legent Corp. be acquired by CA? Not voluntarily, Executive Vice President Mario Morino said. Should CA mount a hostile takeover attempt — an event Morino called unlikely — "You'd see an absolute rebellion in the marketplace," he said.

Nor did Cincom Systems, Inc. founder Tom Nies volunteer his privately held firm as a possible CA catch. Nevertheless, he found reason to welcome CA's return to its old acquiring ways. "As more companies disappear [into CA]," he noted, "we're moving up in the ranks."

NELL MARGOLIS

# Portables

FROM PAGE 1

on pricing, said a source close to the firm, although several sources said it was considering a price tag near $4,000.

Toshiba will hit the market with the Sept. 9 debut of its T2200, a 4½-pound notebook computer based on Intel's 20-MHz 80386SX chip. The T2200 will have a 60M-byte hard drive, and its letter keys on the keyboard will be the same size as on a standard desktop keyboard. Toshiba will shrink down the peripheral keys, such as the shift key, to accommodate the full-size letter keys. The T2200 will be priced aggressively, in the $2,900 to $3,400 range, one source said.

Toshiba is expected to have two other notebooks out by Comdex, including one rumored to be based on Advanced Micro Devices, Inc.'s AM386SXL, a power-management clone of Intel's 80386SX. Toshiba refused to comment on any of the products.

Reliable sources said Everex Systems, Inc. will add to its notebook line with a 5½-pound Tempo product based on the Intel 80386SL. However, Everex's portable product manager, Dennis Jow, denied this.

According to the sources, power-management techniques combined with the chip's power-management capabilities are expected to give the box up to 10 hours of battery life.

Also expected is the announcement of a 12-pound, AC-powered laptop with a color screen and 4M bytes of random-access memory, based on Intel's 33-MHz and 50-MHz I486DX chips. It will be available with 4M bytes of RAM.

Among new competitors in the notebook market will be Apple Computer, Inc. [CW, June 17]. In addition, most analysts said Asian clone vendors will be out in force, many with products based on Intel's 80386SL.

**Break point**

*Pen-based and pen/keyboard hybrid computers are gearing up for growth*

Projected U.S. unit shipments by packaging type

| | 1991 | 1992 | 1993 |
|---|---|---|---|
| Pen tablet | 45,000 | 367,000 | 423,000 |
| Laptop/ Notebook | 1.6M | 2.3M | 2.2M |
| Pentop | 30,000 | 210,000 | 1M |
| Desktop | 10.3M | 9.5M | 9M |

Source: Lempesis Research — CW Chart: Janell Genovese

Sources said a number of vendors will announce pen-based products, with notable entries from Grid Systems Corp. and NEC Technologies, Inc., and the first "pentops," a new class of machine that combines pen-based computing with a keyboard, may appear.

But the notebook market will remain dominant, with two major trends developing.

"I believe we're going to pretty much see pricing stop at $2,500 to $3,500 on the street in [notebooks], and we'll add more functionality," said Andrew M. Seybold, personal computer analyst at Dataquest, Inc. in San Jose, Calif. Seybold said notebooks would be 1 to 1½ pounds lighter, with more power and speed than those on the market today.

Analysts disagreed sharply on the near-term future of pen-based systems.

"My guess is this Comdex this fall will be the last hurrah of keyboard machines," said Gib Hoxie, head of Boox Allen & Hamilton, Inc.'s Information Industry Practice in San Francisco. Hoxie predicted pen-based machines and those with wireless capabilities will quickly take over the market.

However, Bruce Stephen, director of PC hardware research at International Data Corp. in Framingham, Mass., disagreed, saying, "To make a statement that the keyboard is going to go away is a bit premature. Pen products are very, very early in life cycle — notebooks are still expanding very, very rapidly."

Among other trends are the following:

- Hard drives will store more and get smaller. In the 2½-in. form factor, the current standard, capacities of 100M bytes and 120M bytes will be achieved, and 1.8-in. form factors may be in prototype machines at Comdex.
- Battery-powered color is closer. Several vendors, including Compaq Computer Corp., Zenith Data Systems and Dell Computer Corp., are rumored to be working on battery-powered laptops with color screens.
- Cellular communications options will be widespread, with cellular fax/modems and built-in paging capabilities as options.

# AM386SXL rolls out in AST's new notebook

BY MICHAEL FITZGERALD
CW STAFF

IRVINE, Calif. — AST Research, Inc. is planning this week to introduce the Premium Exec 386SX/25, the first notebook based on Advanced Micro Devices, Inc.'s 386SXL chip, a power-management clone of Intel Corp.'s 80386SX.

The 7-pound box claims three hours of battery life and has an 80M-byte hard drive, 4M bytes of random-access memory and an 8½-in. IBM Video Graphics Array-compatible screen. Scheduled to be available this week, it will list for $4,795. AMD claims the 25-MHz chip offers a 25% performance increase over a 20-MHz Intel 80386SX chip.

Users contacted said they were impressed by the machine's specifications and price.

"That's a nice price," said Robert McLoughlin, assistant vice president of microcomputer procurement at New York Life Insurance Co. "I'll have to check it out."

Analysts said AST is beginning to establish itself as a force in the portable market, despite shipping its first portable in the fall of 1990.

"They've come out of nowhere in terms of laptop background, and yet in notebooks, they're among the leaders," said Michael Kelly, president of Techtel Corp., a market research firm in Emeryville, Calif.

Bruce Stephen, director of personal computer hardware research at International Data Corp., praised AST for its aggressive notebook strategy. "They are locked onto this formula of getting into the market early at an affordable price."

Genelle Trader, director of portable systems marketing at AST, said this would not be the company's last portable announcement this year. She cited pen technology, nickel hydride batteries and color screens as technologies AST is developing.

**Portable power**

*AST Research's Premium Exec 386SX/25 is the first to use Advanced Micro Devices' top-of-the-line SX chip*

**Processor:** 25-MHz AMD 386SXL
**Memory:** 4M bytes standard
**Storage:** 1.44M-byte floppy drive, 80M-byte hard drive
**Weight:** 7 pounds
**Battery life:** 3 hours
**Price:** $4,795

Source: AST Research, Inc.

# Users cite ease of QuickC for Windows

BY CHRISTOPHER LINDQUIST
CW STAFF

SEATTLE — Microsoft Corp. continued to fill the gaps in its wall of Windows development languages last week with the announcement of QuickC for Windows, a C-based Windows programming environment that does not require use of the sometimes complex and time-consuming Windows Software Development Kit (SDK).

The product was unveiled at the Microsoft Developers Tools Forum here. Beta-test users contacted last week praised its ease of use and fully Windows-based integrated environment, but they were quick to add that the existing Microsoft C and the SDK are far from obsolete.

Microsoft C Version 6.0 "is this slow, big thing that seems like it takes forever to really do anything," said Robert Richardson, MIS director at Fas'n-all, a maintenance and repair product distributor in Hillsboro, Ore. "QuickC is very fast."

Kent Wilber, projects manager and senior programmer at Chicago Laser Systems, Inc., agreed.

"It really is an order of magnitude easier than the normal [Microsoft] C 6.0, SDK and Codeview combination that you would use for a large project," he said.

Both men, however, added that QuickC would not act as a replacement for Microsoft C and the SDK. While Microsoft C has flexibility and optimization features well beyond those of QuickC for Windows, Wilber said, "For small to medium projects, I think [QuickC for Windows] is absolutely perfect."

Richardson added that the lack of some features should not dissuade developers from QuickC, however. "Write all your code, get all your stuff done, get all your functionality the way that you want it, and then go get C 6.0 and use it to do the optimizing," he said.

While QuickC for Windows' ease of use will no doubt attract C programmers, it may also act as a transition environment for other developers.

Neal Hill, senior analyst for software at Forrester Research, Inc. in Cambridge, Mass., said the tool will likely appeal to corporate programmers experienced in languages such as Cobol and Fortran who are looking to step into Windows development. "This is probably a tremendous tool for them to take their first step into the Windows environment and, sort of coincidently, a first step into C itself," he said.

QuickC for Windows may also gain the attention of developers looking to prototype Windows applications but wanting the flexibility of C if they decide to pursue the project further.

Developers can write, compile, test and debug Windows applications while remaining in Windows, speeding development time. QuickC for Windows also comes with Quickwin libraries to quickly convert existing C code into Windows applications. Quickcase:W, an interface builder and code generator from Caseworks, Inc., is also included.

QuickC for Windows is expected to ship by the end of September, according to Microsoft.

The retail price will be $199, but registered owners of Microsoft C Version 5.0 and higher and QuickC Version 2.0 and higher will be able to upgrade for $99, according to the firm.

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## Why Wendell Berry is NOT going to buy a computer

Wendell Berry is a farmer, essayist and conservationist, and he is not going to buy a computer. In an essay in the book *Computerization and Controversy* (Academic Press, 1991), Berry complains that using a computer to facilitate his writing would displace his wife (who is his typist/critic) and support an industry that tries to seduce struggling farmers to buy another piece of expensive equipment. After suggesting that the computer is not an improvement over the pencil, Berry proceeds to list his standards for technological innovation:

- The new tool should be cheaper, smaller and do demonstrably better work than the one it replaces.
- It should use less energy than the one it replaces and, if possible, it should use some form of solar energy (including human energy).
- It should be repairable by an ordinary person with the necessary tools.
- It should be purchasable and repairable as near to home as possible, ideally from a small shop that will take it back for maintenance and repairs.
- It should not replace or disrupt anything good that already exists, including family and community relationships.

## Acronym fun

*What our acronyms translate into in other industries*

[redacted]
Detection radar automatic monitoring

[redacted]
Lime ammonium nitrate (fertilizer)

Local apparent noon (navigation)

[redacted]
Miniature implantable power system

Missile impact prediction systems

[redacted]
Return on market value (finance)

Rupture of membranes (medicine)

## GREAT NAMES

Farm Credit Banks (Columbia, S.C.)
Jeff Cash, Manager of Operations

Santa Rosa Junior College (Santa Rosa, Calif.)
Bob Schooling, Director of Computer Services

Treasure Island, Inc. (Dover, Fla.)
Robert J. Marsh, Director of MIS

## DID YOU KNOW?

**Onetime offer**
One of the largest public stock offerings of modern times was made by Apple Computer, Inc. in 1980. The offering was the largest since Ford Motor Co.'s in 1956.

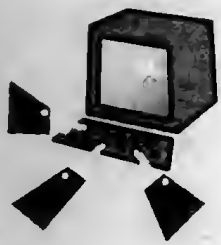
**Count me in**
The abacus was one of the earliest counting devices, probably originating in Babylonia around 3000 B.C. and spreading to other countries. Greece, not China, received the abacus first.

**Early storage**
During the development of computers in the 1930s and 1940s, old movie film and aluminum tape were used to store computer data.

## Industry leaders & laggards

*Average number of white-collar workers per terminal or PC keyboard*

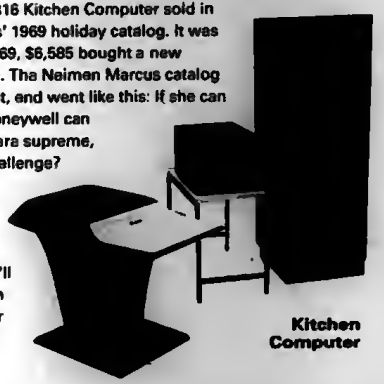
| | |
|---|---|
| **Leaders** | |
| Agriculture/Mining/Construction | 1.2 |
| Electronic data processing services | 1.2 |
| Discrete manufacturing | 1.5 |
| **Laggards** | |
| Wholesale/Retail | 4 |
| Medical/Education | 3.1 |
| Business services | 2.6 |



▶ Do you have anecdotes about your users, your boss or your job? Know any industry trivia? If so, please contact Lory Zottola or Jodie Naze at (800) 343-6474. If we use your ideas, we'll send you a gift.

Sources: *Harper's; Dallas Morning News* (Sept. 23, 1990); Computer Intelligence/Infocorp.; Special thanks to The Computer Museum, Boston

This Honeywell, Inc. H316 Kitchen Computer sold in retailer Neiman Marcus' 1969 holiday catalog. It was priced at $10,600 (in 1969, $6,585 bought a new Cadillac Coupe DeVille). The Neiman Marcus catalog copy is dated and sexist, and went like this: If she can only cook as well as Honeywell can compute. Her souffles are supreme, her meal planning a challenge? She's what the Honeywell people had in mind when they devised our Kitchen Computer. She'll learn to program it with a cross-reference to her favorite recipes.



Kitchen Computer

# INSIDE LINES

### Mme. Guillotine be damned!

▶ Although rumors of beta bugginess had bulletin board browsers predicting that Wordperfect for Windows won't be out till Christmas, a company official swears by the mid-October deadline. "Heads will roll if it's not out by then," the official said.

### Why not earmuffs for fish?

▶ Some industry analysts are wondering just how far IBM will go in slapping unnecessary — albeit politically correct — SAA enhancements on product lines such as the midrange Application System/400. "SAA is a huge set of political compromises," one AS/400 consultant said. Take the SAA Fortran compiler on the AS/400, for example, which few customers are even remotely interested in using. Now, this week, IBM will announce a CICS interface for the AS/400, even though no one is likely to migrate monstrously large CICS applications to the midrange machine. "What's next? CICS applications for the PS/2?" the consultant asked.

### You can quote us

▶ It's not public yet, but Lotus has finally settled on a text retrieval technology for its Notes groupware product. And it's not Verity's Topic, as was reported elsewhere. Still under wraps is an agreement with Ottawa-based Fulcrum Technology that will enable Lotus to incorporate its Full/Text program into Notes. A Notes user tells us that Lotus has been working on this issue for a long time and with good reason. "What people want in Notes is the ability to do full text retrieval on Notes databases, but today, you can only index and categorize things by fields," which takes a long time, according to the Notes user. Full/Text will allow users to define the parameters of their search, store textual documents and retrieve data using any word.

### Color us waiting

▶ The quest for battery-powered color portables continues, with several vendors reportedly closing in, among them Compaq, Dell and Zenith Data Systems. Observers say the color screens generally are not high quality, zap too much power from the batteries, are unworkable in anything smaller than a luggable and take a serious bite from the budget.

### Downsizing plans

▶ NEC Technologies is telling major customers that it will stop making laptops in the not-too-distant future in order to focus on smaller portables, such as notebooks and pen-based products. NEC is one of the leaders in the portable market but has not had much of a presence in the smaller arena.

### Idle minds and devil's playgrounds

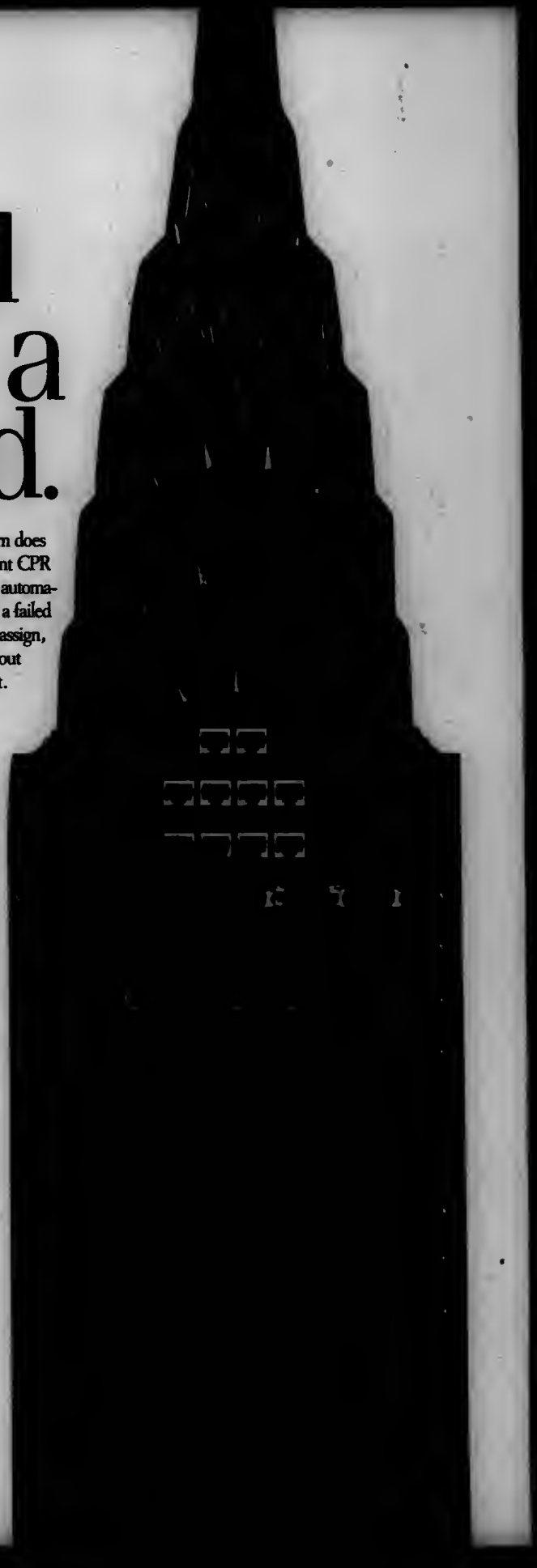
▶ Contrary to industry rumor, Wang Laboratories says that the Open Server VS product is still alive and kicking and will be out by the end of the year. There have been reports recently that Wang had canned the entire project with the last round of layoffs at the company. Open Server is Wang's strategy for linking proprietary VS systems to PC LANS.

### Decisions, decisions

▶ Pearle, Inc., the Dallas-based parent company of a national chain of eye-care stores, has begun the process of selecting which database management system will be its corporatewide standard for Unix. "It's a very difficult choice," said Colby Springer, vice president of IS. Unlike in the mainframe world, he said, there is no one package that is the clear winner. "Do you buy the best product, or do you go with the one from the most stable vendor and hope it's still stable in three or four years?"

*Hoping to serve its mixed membership (libraries, information services, publishing), the National Information Standards Organization plans to cover the following three topics at this month's meeting: Whether the lack of information technology standards will force the U.S. to concede global leadership; Computer security: What's possible? What's fair; and last but not least, Paper recycling. We're not into recycling old ideas, but if you have a fresh one, give Assistant News Editor Jim Connolly a shout at (800) 343-6474, send a fax to (508) 875-8931 or Compuserve the scoundrel at 76537,2413.*

# Network tall buildings in a single bound.



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UNIX DATABASE

# Which UNIX® RDBMS did Hewlett-Packard®, IBM®, Unisys®, Data General®, AT&T®, Sun®, and Sequent® choose to demonstrate the power of their latest UNIX Systems?

# Informix.

**IDC Study on UNIX OLTP**
*UNIX On-Line Transaction Processing at Multi-User UNIX Sites* (January 1991) states that some 47.4% of sites running commercial applications on multi-user UNIX systems are running OLTP. The study reports that Informix is in use at more sites than any other DBMS for UNIX OLTP applications.

**About the TPC**
The Transaction Processing Performance Council (TPC) was founded in 1988 to define transaction processing benchmarks and to provide performance data to the industry. Today, 40 hardware and software vendors, including AT&T, Bull, Sybase, Data General, DEC, ASK/Ingres, Fujitsu, IBM, Informix, Hewlett-Packard, NCR, Olivetti, Oracle, Pyramid, Sequent, Siemens, Sun, and Unisys are members.

Within the past five months, *every one* of these companies selected and used the INFORMIX-OnLine database server to demonstrate to their customers the power of their latest UNIX systems. No other UNIX database product has been this extensively benchmarked—because nothing shows performance like OnLine.

### New TPC Benchmarks Used

In each case, the Transaction Processing Performance Council's rigorous TPC A and TPC B benchmarks—the new standard for comparing system and database performance—were used to highlight OLTP performance and database throughput.

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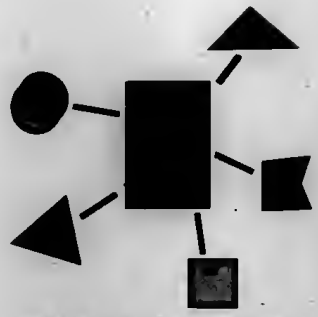

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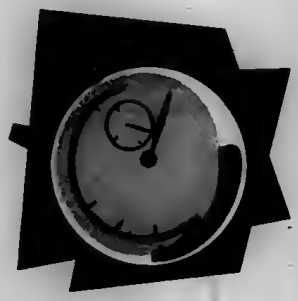

**TP1 vs. TPC Benchmarks**
The TP1 benchmark is no longer the accepted benchmark for measuring database performance. The new TPC tests establish more complete, thorough specifications than TP1, leading to more objective, verifiable results for comparing performance between hardware systems and software products. TPC Benchmark™ A measures OLTP processing performance. TPC Benchmark™ B—similar to a batch test—focuses on database throughput.

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